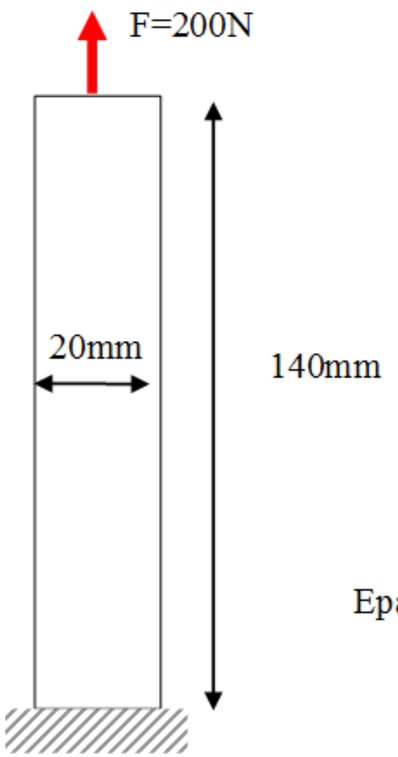
L'objectif de ce tutoriel est de vous montrer étape par étape la création d'un modèle éléments finis sur Abaqus pour simuler un essai de traction

9.7.1 Conditions de l'essai



Le matériau utilisé est un alliage d'aluminium. Le comportement plastique est linéaire, avec :

E = 80 000MPa

ν=0.3

Densité = 2700kg/m^3

Simulation Statique.

L'éprouvette est montée dans des mors

Rappel des données du modèle

Attention : rester homogène dans les unités.

En Statique, vous pouvez travailler soit en mm, soit en m

En dynamique, ne travailler que dans les unités du Système International.

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

Module: Part Model: Model-1 Part:

Model Results

- Models (1)
  - Model-1
    - Parts
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction P
    - Contact Co
    - Contact Init
    - Constraints
    - Connector S
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined F
    - Remeshing
    - Optimizatio
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Proc
    - Co-executions
    - Optimization P

Objectif:
Tutorial de prise en main du logiciel ABAQUS

Support d'étude:
Simulation d'un essai de traction avec des éléments linéiques de type TRUSS

Exploitation des résultats

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

Module: Part Model: Model-1 Part:

Model Results

- Models (1)
  - Model-1
    - Parts
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields
    - Remeshing Rules
    - Optimization Tasks
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Processes
    - Co-executions
    - Optimization Processes

On souhaite réaliser l'étude de l'essai de traction avec des éléments barre (Truss):

- la géométrie est définie comme une ligne
- les éléments sont des truss
- la propriété de section est renseignée sous forme d'une section transverse.
- les conditions aux limites sont:
- un encastrement à la base
- un effort concentré au sommet de 200N

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

All

Part defaults

Model Results

Module: Part Model: Model-1 Part:

- Models (1)
  - Model-1
    - Parts
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction P
    - Contact Co
    - Contact Init
    - Constraints
    - Connector S
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined F
    - Remeshing
    - Optimizatio
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Proc
    - Co-executions
    - Optimization P

Etape 1.
Création de pièce

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

All

Part defaults

Model Results

Module: Part Model: Model-1 Part:

Création de pièce

- Models (1)
  - Model-1
    - Parts
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields
    - Remeshing
    - Optimization Tasks
    - Sketches
  - Annotations
- Analysis
  - Jobs
  - Adaptivity Processes
  - Co-executions
  - Optimization Processes

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

Create Part

Name: Part-1

Modeling Space

3D 2D Planar Axisymmetric

Type

Deformable
Discrete rigid
Analytical rigid
Eulerian

Options

None

Base Feature

Shape

Solid
Shell
Wire
Point

Type

Extrusion
Revolution
Sweep

Approximate size: 200

Continue... Cancel

Model Results

Module: Part Model: Model-1 Part:

Part defaults

Sections
Profiles
Assembly
Steps (1)
Field Output
History Output
Time Points
Constraints
Connector S
Fields
Amplitudes
Loads
BCs
Predefined F
Remeshing
Optimizatio
Sketches
Annotations
Analysis
Jobs
Adaptivity Proc
Co-executions
Optimization P

Nom de pièce

Propriétés

Shape : Type de géométrie (3D, 2D, 1D)
Type: manière de réaliser la géométrie

Taille approximative de l'écran pour dessiner la géométrie

Fill out the Create Part dialog

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

Create Part

Name: Part-1

Modeling Space

3D 2D Planar Axisymmetric

Type

Deformable
Discrete rigid
Analytical rigid
Eulerian

Options

None available

Base Feature

Shape

Solid
Shell
Wire
Point

Type

Planar

Approximate size: 0.4

Continue... Cancel

1. Dessin d'une pièce sous forme de ligne

2. Dimension de l'écran 0.4m

3. Valider

Model Results

Module: Part Model: Model-1 Part:

Models (1)
Model-1
Parts
Materials
Calibrations
Sections
Profiles
Assembly
Steps (1)
Field Output
History Output
Time Points
ALE Adaptivity
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Remeshing
Optimization
Sketches
Annotations
Analysis
Jobs
Adaptivity Processes
Co-executions
Optimization Processes

Part defaults

Fill out the Create Part dialog

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

Module: Part Model: Model-1 Part:

Model Results

Models (1)
Model-1
Parts
Materials
Calibrations
Sections
Profiles
Assembly
Steps (1)
Field Output
History Output
Time Points
ALE Adaptivity
Interactions
Interaction P
Contact Co
Contact Init
Constraints
Connector S
Fields
Amplitudes
Loads
BCs
Predefined F
Remeshing
Optimizatio
Sketches
Annotations
Analysis
Jobs
Adaptivity Proc
Co-executions
Optimization P

Un nouvel espace apparait pour dessiner la géométrie:
une ligne de 0.14m de longueur

Fill out the Create Part dialog

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Module: Part Model: Model-1 Part:

Model Results

Models (1)
Model-1
Parts
Materials
Calibrations
Sections
Profiles
Assembly
Steps (1)
Field Output
History Output
Time Points
ALE Adaptivity
Interactions
Interaction P
Contact Co
Contact Init
Constraints
Connector S
Fields
Amplitudes
Loads
BCs
Predefined F
Remeshing
Optimizatio
Sketches
Annotations
Analysis
Jobs
Adaptivity Proc
Co-executions
Optimization P

1. Sélection de l'outil "création de ligne"

Sketch the section for the wire Done

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Module: Part Model: Model-1 Part:

Model Results

Models (1)
Model-1
Parts
Materials
Calibrations
Sections
Profiles
Assembly
Steps (1)
Field Output
History Output
Time Points
ALE Adaptivity
Interactions
Interaction P
Contact Co
Contact Init
Constraints
Connector S
Fields
Amplitudes
Loads
BCs
Predefined F
Remeshing
Optimizatio
Sketches
Annotations
Analysis
Jobs
Adaptivity Proc
Co-executions
Optimization P

x:-0.09, y:0.07

Les coordonnées du curseur apparaissent

Pick a starting point for the line--or enter X,Y:

Vous pouvez également renseigner les coordonnées dans cette zone

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Model Results

Module: Part Model: Model-1 Part:

- Models (1)
  - Model-1
    - Parts
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction P
    - Contact Co
    - Contact Init
    - Constraints
    - Connector S
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined F
    - Remeshing
    - Optimizatio
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Proc
    - Co-executions
    - Optimization P

x:0., y:0.

Positionner le pointeur de souris sur l'origine, puis clique droit sur la souris

Pick a starting point for the line--or enter X,Y:

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Model Results

Module: Part Model: Model-1 Part:

- Models (1)
  - Model-1
    - Parts
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction P
    - Contact Co
    - Contact Init
    - Constraints
    - Connector S
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined F
    - Remeshing
    - Optimizatio
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Proc
    - Co-executions
    - Optimization P

x:0., y:0.06

Une ligne est en cours de création

Pick an end point for the line--or enter X,Y:

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Model: Part Model: Model-1 Part:

Model Results

- Models (1)
  - Model-1
    - Parts
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields
    - Remeshing
    - Optimization
    - Sketches
  - Annotations
- Analysis
  - Jobs
  - Adaptivity Processes
  - Co-executions
  - Optimization Processes

x:0, y:0.06

Pick an end point for the line--or enter X,Y:

Renseigner les coordonnées de fin de ligne:
0,0.14 puis appuyer sur la touche "Entrée"

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Model Results

Module: Part Model: Model-1 Part: Part-1

- Models (1)
  - Model-1
    - Parts (1)
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields
    - Remeshing
    - Optimization Tasks
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Processes
    - Co-executions
    - Optimization Processes

Add Dimension

Création d'une cote pour dimensionner/vérifier/redimensionner la géométrie

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Module: Part Model: Model-1 Part: Part-1

Model Results

Models (1)
Model-1
Parts (1)
Materials
Calibrations
Sections
Profiles
Assembly
Steps (1)
Field Output
History Output
Time Points
ALE Adaptivity
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields
Remeshing
Optimization
Sketches
Annotations
Analysis
Jobs
Adaptivity Processes
Co-executions
Optimization Processes

x:0., y:0.1

0.14

Sélection de la ligne et décaler la souris

Pick the second entity or location for the dimension text--or enter X,Y:

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Model Results

Module: Part Model: Model-1 Part: Part-1

- Models (1)
  - Model-1
    - Parts (1)
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction P
    - Contact Co
    - Contact Init
    - Constraints
    - Connector S
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined F
    - Remeshing
    - Optimizatio
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Proc
    - Co-executions
    - Optimization P

x:-0.03, y:0.1

Valider par un appui sur la molette de la souris (ou par la touche "Entrée".

0.14

New dimension: 0.14

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Module: Part Model: Model-1 Part: Part-1

Model Results

- Models (1)
  - Model-1
    - Parts (1)
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction P
    - Contact Con
    - Contact Init
    - Constraints
    - Connector S
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined F
    - Remeshing
    - Optimizatio
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Proc
    - Co-executions
    - Optimization P

La géométrie de la pièce est entièrement définie.
Valider en appuyant sur la molette (ou touche "Entrée")

0.14

Select the entity to dimension

Cancel Procedure

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Edit Add Tools Plug-ins Help

Module: Part Model: Model-1 Part: Part-1

Model Results

- Models (1)
  - Model-1
    - Parts (1)
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output
    - History Output
    - Time Points
    - ALE Adaptivity
    - Interactions
    - Interaction P
    - Contact Co
    - Contact Init
    - Constraints
    - Connector S
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined F
    - Remeshing
    - Optimizatio
    - Sketches
  - Annotations
  - Analysis
    - Jobs
    - Adaptivity Proc
    - Co-executions
    - Optimization P

Abaqus/CAE

The operation you just chose will cancel the current procedure and all changes will be lost.

OK to continue?

Yes No

0.14

Edit the section sketch Done

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

Model Results

Module: Part Model: Model-1 Part: Part-1

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfa
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Section Sketch

Dans la structure du modèle, vous pouvez à tout moment ré-éditer des données en double cliquant dessus.

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

Model Results

Module: Part | Model: Model-1 | Part: Part-1

Part
Property
Assembly
Step
Interaction
Load
Mesh
Optimization
Job
Visualization
Sketch

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Etape 2.
Définition des propriétés de la pièce

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Part Shape Feature Tools Plug-ins Help

Model Results

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Module: Part | Model: Model-1 | Part: Part-1

Part defaults

Part
Property
Assembly
Step
Interaction
Load
Mesh
Optimization
Job
Visualization
Sketch

Menu Property

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

All

Property defaults

Model Results Material Library Module: Property Model: Model-1 Part: Part-1

Edit Material

Name: Alu

Description:

Renseigner le nom du matériau

Material Behaviors

General Mechanical Thermal Other

Elasticity
Plasticity
Damage for Ductile Metals
Damage for Traction Separation Laws
Damage for Fiber-Reinforced Composites
Damage for Elastomers
Deformation Plasticity
Damping
Expansion
Brittle Cracking
Eos
Viscosity

Elastic
Hyperelastic
Hyperfoam
Low Density Foam
Hypoelastic
Porous Elastic
Viscoelastic

Choisir des propriétés de type Elastic

OK Cancel

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

All

Property defaults

Model Results Material Library Module: Property Model: Model-1 Part: Part-1

Edit Material

Name: Alu

Description:

Material Behaviors

Elastic

General Mechanical Thermal Other

Elastic

Type: Isotropic Suboptions

Use temperature-dependent data

Number of field variables: 0

Moduli time scale (for viscoelasticity): Long-term

No compression

No tension

Data

	Young's Modulus	Poisson's Ratio
1	80000e6	0.3

Donner les valeurs de:
Module Young : 80 000 MPa
Coef. de Poisson : 0.3

OK Cancel

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Property defaults

Model Results Material Library

Module: Property Model: Model-1 Part: Part-1

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Create Section

Ensuite, il faut définir les propriétés de section de la pièce

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Property defaults

Model Results Material Library

Module: Property Model: Model-1 Part: Part-1

Model Datab

Create Section

Name: Section-1

Category: Solid, Shell, Beam, Fluid, Other

Type: Beam, Truss

Continue... Cancel

Choisir :
Category : Beam
Type : Truss

Puis valider

Mesh
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (2)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)
Predefined Fields

SIMULIA

The job input file "Job-1.inp" has been submitted for analysis.
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Edit Section

Name: Section-2

Type: Truss

Material: Alu

Cross-sectional area: 20e-6

Temperature variation: Constant through thickness

OK Cancel

Renseigner la section transverse:
20e-6 m²

Material Library

Module: Property Model: Model-1 Part: Part-1

Property defaults

Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (2)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)
Predefined Fields

SIMULIA

```
The job input file "Job-1.inp" has been submitted for analysis.
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.
```

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Property defaults

Model Results Material Library

Module: Property Model: Model-1 Part: Part-1

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Assign Section

Il est nécessaire de rattacher ces propriétés à la géométrie. Pour cela, sélectionner:
"Assign Section"

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Regions

Property defaults

Model Results Material Library

Module: Property Model: Model-1 Part: Part-1

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Sélectionner la géométrie

Select the regions to be assigned a section Done

Sets...

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Regions

Property defaults

Model Results Material Library

Model Datab

Module: Property Model: Model-1 Part: Part-1

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Puis valider (appui sur molette ou touche "Entrée")

Select the regions to be assigned a section Done Sets...

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Property defaults

Model Results Material Library

Module: Property Model: Model-1 Part: Part-1

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Composite Layups
Engineering Feature
Mesh
Materials (1)
Calibrations
Sections (2)
Profiles
Assembly
Steps (2)
Field Output Requests (1)
History Output Requests (1
Time Points
ALE Adaptive Mesh Constr
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)

Edit Section Assignment

Region
Region: (Picked)

Section
Section: Section-1

Note: List contains only sections applicable to the selected regions.

Type: Truss
Material: Alu

OK Cancel

Récapitulatif des données.

Valider (appui sur molette ou touche "Entrée")

Fill out the Edit Section Assignment dialog

SIMULIA

```
The job input file "Job-1.inp" has been submitted for analysis.
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.
```

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Model Results Material Library

Module: Property Model: Model-1 Part: Part-1

Property defaults

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Module menu: Part, Property, **Assembly**, Step, Interaction, Load, Mesh, Optimization, Job, Visualization, Sketch

Etape 3.
Création de l'assemblage

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Material Section Profile Composite Assign Special Feature Tools Plug-ins Help

Model Results Material Library

Module: Property Model: Model-1 Part: Part-1

Property defaults

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Part
Property
Assembly
Step
Interaction
Load
Mesh
Optimization
Job
Visualization
Sketch

Dans tous les cas, il est nécessaire de faire un assemblage même si votre étude ne comporte qu'une seule pièce.

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Instance Constraint Feature Tools Plug-ins Help

Module: Assembly Model: Model-1 Step: Initial

Model Results

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Section Sket
Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh (Empty)
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (1)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Instance Part

Sélectionner la pièce à assembler

Assembly defaults

All

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Instance Constraint Feature Tools Plug-ins Help

Assembly defaults

Module: Assembly Model: Model-1 Step: Step-1

Create Instance

Parts

Part-1

Sélectionner la pièce à assembler

Instance Type

A meshed part has been selected, so the instance type will be Dependent.

Note: To change a Dependent instance's mesh, you must edit its part's mesh.

Auto-offset from other instances

OK

Valider

Features (1)
Wire-1
Section Sketch
Sets
Surfaces
Skins
Stringers
Section Assignments
Section-1 (Truss)
Orientations
Composite Layups
Engineering Features
Mesh
Materials (1)
Calibrations
Sections (2)
Profiles
Assembly
Steps (2)
Field Output Requests (1)
History Output Requests (1
Time Points
ALE Adaptive Mesh Constr
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)

Select the parts to instance from the dialog

SIMULIA

```
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.
Application restarted after 82 minutes of idle time; the license will be checked within the next 3 minutes.
```

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Instance Constraint Feature Tools Plug-ins Help

Module: Assembly | Model: Model-1 | Step: Initial

Model Results

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (1)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads
    - BCs
    - Predefined Fields

Part
Property
Assembly
Step
Interaction
Load
Mesh
Optimization
Job
Visualization
Sketch

Etape 4.
Définition du type de calcul (statique, dynamique...)

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Instance Constraint Feature Tools Plug-ins Help

Module: Assembly | Model: Model-1 | Step: Initial

Part
Property
Assembly
Step
Interaction
Load
Mesh
Optimization
Job
Visualization
Sketch

Sélectionner le menu step

Model Results

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Section Sket
Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh (Empty)
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (1)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Assembly defaults

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Step Output Other Tools Plug-ins Help

Module: Step Model: Model-1 Step: Initial

Model Results

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Section Sket
Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh (Empty)
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (1)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Create Step

Choisir "Create Step"

Assembly defaults

All

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Step Output Other Tools Plug-ins Help

Module: Step Model: Model-1 Step: Initial

Model Results

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Section Sket
Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh (Empty)
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Create Step

Name: Step-1

Insert new step after

Initial

Procedure type: General

Dynamic, Explicit
Dynamic, Temp-disp, Explicit
Geostatic
Heat transfer
Mass diffusion
Soils
Static, General
Static, Riks

Continue... Cancel

Choisir "Static, General"

SIMULIA

Edit Step

Name: Step-1

Type: Static, General

Basic | Incrementation | Other

Description:

Time period: 1

NIgeom: Off / On (This setting controls the inclusion of nonlinear effects of large displacements and affects subsequent steps.)

Automatic stabilization: None

Include adiabatic heating effects

OK | Cancel

Laisser les options par défaut (durée simulation 1 seconde)

Help

All

Assembly defaults

Initial

Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Jobs
Adapt
Co-ex
Optim

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Step Output Other Tools Plug-ins Help

Module: Step | Model: Model-1 | Step: Step-1

Part
Property
Assembly
Step
Interaction
Load
Mesh
Optimization
Job
Visualization
Sketch

Model Results

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Section Sket
Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh (Empty)
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (2)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Etape 5.
Définition des conditions aux limites (Menu "Load")

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Load BC Predefined Field Load Case Feature Tools Plug-ins Help

Module: Load Model: Model-1 Step: Step-1

Model Results

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Section Sket
Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh (Empty)
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (2)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Create Load

Définition d'une sollicitation

Assembly defaults

All

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Load BC Predefined Field Load Case Feature Tools Plug-ins Help

Module: Load Model: Model-1 Step: Step-1

Assembly defaults

Create Load

Name: Load-1

Step: Step-1

Procedure: Static, General

Category

- Mechanical
- Thermal
- Acoustic
- Fluid
- Electrical
- Mass diffusion
- Other

Types for Selected Step

- Concentrated force
- Moment
- Pressure
- Shell edge load
- Surface traction
- Pipe pressure
- Body force
- Line load
- Gravity
- Bolt load
- Generalized plane strain
- Rotational body force
- Coriolis force
- Connector force

Continue... Cancel

En fonction de la modélisation, un effort concentré est à appliquer au sommet de la barre

Sections (1)
Profiles
Assembly
Steps (2)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Fill out the Create Load dialog

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Load BC Predefined Field Load Case Feature Tools Plug-ins Help

Module: Load Model: Model-1 Step: Step-1

Model Results

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
    - Features (1)
      - Wire-1
        - Section Sket
    - Sets
    - Surfaces
    - Skins
    - Stringers
    - Section Assign
    - Orientations
    - Composite Lay
    - Engineering Fe
    - Mesh (Empty)
  - Materials (1)
  - Calibrations
  - Sections (1)
  - Profiles
  - Assembly
  - Steps (2)
  - Field Output Request
  - History Output Reque
  - Time Points
  - ALE Adaptive Mesh C
  - Interactions
  - Interaction Properties
  - Contact Controls
  - Contact Initializations
  - Constraints
  - Connector Sections
  - Fields
  - Amplitudes
  - Loads
  - BCs
  - Predefined Fields

Sélectionner le point d'application de la charge

Select points for the load Done Sets...

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Load BC Predefined Field Load Case Feature Tools Plug-ins Help

Module: Load Model: Model-1 Step: Step-1

Model Results

Model Datab

Models (1)
Model-1
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads
BCs
Predefined Fields

Edit Load

Name: Load-1
Type: Concentrated force
Step: Step-1 (Static, General)
Region: (Picked)
CSYS: (Global)
Distribution: Uniform
CF1:
CF2: 200
CF3:
Amplitude: (Ramp)
Follow nodal rotation
Note: Force will be applied per node.
OK Cancel

Puis renseigner la composante verticale de l'effort (200N selon l'axe y)

Fill out the Edit Load dialog

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Load BC Predefined Field Load Case Feature Tools Plug-ins Help

Module: Load Model: Model-1 Step: Step-1

Model Results

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (2)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads (1)
    - BCs
    - Predefined Fields

Create Boundary Condition

Définition des conditions aux limites en déplacement sur le bas de l'éprouvette

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Load BC Predefined Field Load Case Feature Tools Plug-ins Help

Module: Load Model: Model-1 Step: Step-1

Assembly defaults

Create Boundary Condition

Name: BC-1

Step: Step-1

Procedure: Static, General

Category

- Mechanical
- Fluid
- Other

Types for Selected Step

- Symmetry/Antisymmetry/Encastre
- Displacement/Rotation
- Velocity/Angular velocity
- Connector displacement
- Connector velocity

Continue... Cancel

Choisir "Displacement/Rotation

Model Tree

- Calibrations
- Sections (1)
- Profiles
- Assembly
- Steps (2)
- Field Output Request
- History Output Reque
- Time Points
- ALE Adaptive Mesh C
- Interactions
- Interaction Properties
- Contact Controls
- Contact Initializations
- Constraints
- Connector Sections
- Fields
- Amplitudes
- Loads (1)
- BCs
- Predefined Fields

Annotatio
Analysis
Jobs
Adapt
Co-ex
Optim

Fill out the Create Boundary Condition dialog

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Load BC Predefined Field Load Case Feature Tools Plug-ins Help

Module: Load Model: Model-1 Step: Step-1

Edit Boundary Condition

Name: BC-1
Type: Displacement/Rotation
Step: Step-1 (Static, General)
Region: (Picked)

CSYS: (Global)

Distribution: Uniform f(x)

U1: 0
U2: 0
U3: 0
UR1: radians
UR2: radians
UR3: radians

Amplitude: (Ramp)

Note: The displacement value will be maintained in subsequent steps.

OK Cancel

Imposer les 3 translations à 0.

Remarque: en raison de la propriété de l'élément Truss (rotule aux extrémité, vous ne pouvez pas bloquer les rotations UR1, UR et UR3).

Model Results

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Engineering Fe
Mesh (Empty)
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (2)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs
Predefined Fields

Annotatio
Analysis
Jobs
Adapt
Co-ex
Optim

Fill out the Edit Boundary Condition dialog

SIMULIA

4 5

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Load BC Predefined Field Load Case Feature Tools Plug-ins Help

Module: Load | Model: Model-1 | Step: Step-1

Part
Property
Assembly
Step
Interaction
Load
Mesh
Optimization
Job
Visualization
Sketch

Model Results

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (2)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads (1)
    - BCs (1)
    - Predefined Fields

Etape 6.
Création du maillage

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Seed Mesh Adaptivity Feature Tools Plug-ins Help

Module: Mesh Model: Model-1 Object: Assembly Part:

Model Results

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Section Sket
Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh (Empty)
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (2)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)
Predefined Fields

Seed Edges

Il est nécessaire de définir la position des éléments le long de la géométrie

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Seed Mesh Adaptivity Feature Tools Plug-ins Help

Module: Mesh Model: Model-1 Object: Assembly Part: Part-1

Model Results

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (2)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads (1)
    - BCs (1)
    - Predefined Fields

Sélectionner la géométrie et Valider

Select the regions to be assigned local seeds Done Use single-bias picking Sets / Surfaces...

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Seed Mesh Adaptivity Feature Tools Plug-ins Help

Module: Mesh Model: Model-1 Object: Assembly Part: Part-1

Mesh defaults

Local Seeds

Basic Constraints

Method
- By size
- By number

Bias
- None
- Single
- Double

Sizing Controls

Number of elements: 1

Set Creation

Create set with name: Edge Seeds-1

OK Apply Defaults Cancel

Choisir "By number" et renseigner le nombre d'élément souhaité. Ici, 1.

Model tree:
- Orientations
- Composite Lay
- Engineering Fe
- Mesh (Empty)
- Materials (1)
- Calibrations
- Sections (1)
- Profiles
- Assembly
- Steps (2)
- Field Output Request
- History Output Reque
- Time Points
- ALE Adaptive Mesh C
- Interactions
- Interaction Properties
- Contact Controls
- Contact Initializations
- Constraints
- Connector Sections
- Fields
- Amplitudes
- Loads (1)
- BCs (1)
- Predefined Fields
- Annotatio
- Analysis
- Jobs
- Adapt
- Co-ex
- Optim

Set the data using local seed dialog

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Seed Mesh Adaptivity Feature Tools Plug-ins Help

Module: Mesh Model: Model-1 Object: Assembly Part: Part-1

Model Results

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
            - Section Sket
        - Sets
        - Surfaces
        - Skins
        - Stringers
        - Section Assign
        - Orientations
        - Composite Lay
        - Engineering Fe
        - Mesh (Empty)
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (2)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads (1)
    - BCs (1)
    - Predefined Fields

Mesh Part

Il est alors nécessaire de générer le maillage en choisissant : "Mesh Part"

Select the regions to be assigned local seeds Done Use single-bias picking Sets / Surfaces...

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Seed Mesh Adaptivity Feature Tools Plug-ins Help

Module: Mesh Model: Model-1 Object: Assembly Part: Part-1

Model Results

Model Datab

- Models (1)
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        - Surfaces
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    - Amplitudes
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    - BCs (1)
    - Predefined Fields

Sélectionner la géométrie et Valider

OK to mesh the part? Yes No

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Seed Mesh Adaptivity Feature Tools Plug-ins Help

Module: Mesh Model: Model-1 Object: Assembly Part:

Model Results

Model Datab

- Models (1)
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      - Part-1
        - Features (1)
          - Wire-1
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        - Sets
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        - Stringers
        - Section Assign
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        - Composite Lay
        - Engineering Fe
        - Mesh
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    - Profiles
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    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads (1)
    - BCs (1)
    - Predefined Fields

Assign Element Type

Vérifier les types d'éléments utilisés.

```
Error in job Job-1: 1 elements have missing property definitions. The elements have been identified in element set ErrElemMissingSection.
Job Job-1: Analysis Input File Processor aborted due to errors.
Error in job Job-1: Analysis Input File Processor exited with an error.
Job Job-1 aborted due to errors.
```

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Seed Mesh Adaptivity Feature Tools Plug-ins Help

Element Type

Element Library: Standard / Explicit

Geometric Order: Linear / Quadratic

Family:
- Acoustic
- Beam
- Coupled Temperature-Displacement
- Elbow

Par défaut des éléments "Beam" sont utilisés.
Il est nécessaire d'utiliser des éléments TRUSS.

Line

Hybrid formulation Open section

Element Controls

Beam type: Shear-flexible / Cubic formulation

Scaling factors: Linear bulk viscosity: 1

B31: A 2-node linear beam in space.

Note: To select an element shape for meshing, select "Mesh->Controls" from the main menu bar.

OK Defaults Cancel

Model Tree:
- History Output Reque
- Time Points
- ALE Adaptive Mesh C
- Interactions
- Interaction Properties
- Contact Controls
- Contact Initializations
- Constraints
- Connector Sections
- Fields
- Amplitudes
- Loads (1)
- BCs (1)
- Predefined Fields

Set the data using the Element Type dialog

```
Error in job Job-1: 1 elements have missing property definitions. The elements have been identified in element set ErrElemMissingSection.
Job Job-1: Analysis Input File Processor aborted due to errors.
Error in job Job-1: Analysis Input File Processor exited with an error.
Job Job-1 aborted due to errors.
```

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Seed Mesh Adaptivity Feature Tools Plug-ins Help

Element Type

Element Library
Standard Explicit

Geometric Order
Linear Quadratic

Family
Piezoelectric
Pipe
Thermal Electric
Truss

Line

Hybrid formulation

Element Controls

Scaling factors: Linear bulk viscosity: 1

T3D2: A 2-node linear 3-D truss.

Note: To select an element shape for meshing, select "Mesh->Controls" from the main menu bar.

OK Defaults Cancel

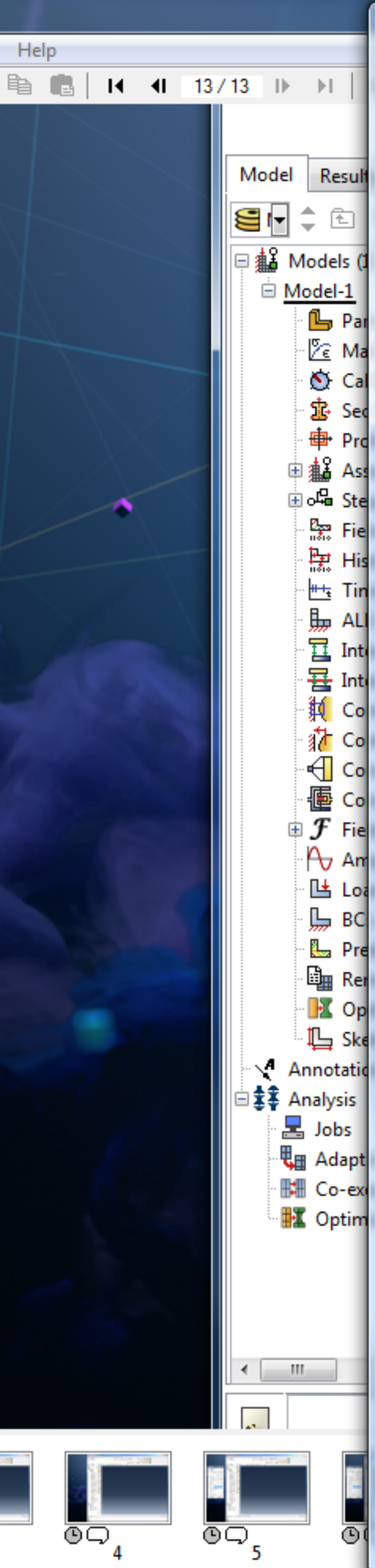
Faire défiller la liste des éléments et sélectionner : TRUSS.

Model Tree
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)
Predefined Fields
Annotatio
Analysis
Jobs

Set the data using the Element Type dialog

```
Error in job Job-1: 1 elements have missing property definitions. The elements have been identified in element set ErrElemMissingSection.
Job Job-1: Analysis Input File Processor aborted due to errors.
Error in job Job-1: Analysis Input File Processor exited with an error.
Job Job-1 aborted due to errors.
```

Etape 7.
Création du fichier de calcul (Job)



Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Job Adaptivity Co-execution Optimization Tools Plug-ins Help

Module: Job Model: Model-1 Step: Step-1

Model Results

Model Datab

Models (1)
Model-1
Parts (1)
Part-1
Features (1)
Wire-1
Section Sket
Sets
Surfaces
Skins
Stringers
Section Assign
Orientations
Composite Lay
Engineering Fe
Mesh
Materials (1)
Calibrations
Sections (1)
Profiles
Assembly
Steps (2)
Field Output Request
History Output Reque
Time Points
ALE Adaptive Mesh C
Interactions
Interaction Properties
Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)
Predefined Fields
Remeshing Rules
Optimization Tasks

Create Job

Créer un fichier de calcul en cliquant sur "Create Job"

1 elements have been generated on part: Part-1

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Job Adaptivity Co-execution Optimization Tools Plug-ins Help

Module: Job Model: Model-1 Step: Step-1

Model Results

Model Datab

- Models (1)
  - Model-1
    - Parts (1)
      - Part-1
        - Features (1)
          - Wire-1
        - Engineering Fe
        - Mesh
    - Materials (1)
    - Calibrations
    - Sections (1)
    - Profiles
    - Assembly
    - Steps (2)
    - Field Output Request
    - History Output Reque
    - Time Points
    - ALE Adaptive Mesh C
    - Interactions
    - Interaction Properties
    - Contact Controls
    - Contact Initializations
    - Constraints
    - Connector Sections
    - Fields
    - Amplitudes
    - Loads (1)
    - BCs (1)
    - Predefined Fields
    - Remeshing Rules

Create Job

Name: Job-1

Source: Model

Model-1

Continue... Cancel

Définir le nom et le modèle utilisé

1 elements have been generated on part: Part-1

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Job Adaptivity Co-execution Optimization Tools Plug-ins Help

Module: Job Model: Model-1 Step: Step-1

Edit Job

Name: Job-1

Model: Model-1

Analysis product: Abaqus/Standard

Description:

Submission | General | Memory | Parallelization | Precision

Job Type
- (•) Full analysis
- ( ) Recover (Explicit)
- ( ) Restart

Run Mode
- (•) Background ( ) Queue: Host name: Type:

Submit Time
- (•) Immediately
- ( ) Wait: hrs. min.
- ( ) At:

OK Cancel

Laisser les options par défaut

Model Tree: Annotations, Analysis, Jobs, Interactions, Interaction Properties, Contact Controls, Contact Initializations, Constraints, Connector Sections, Fields, Amplitudes, Loads (1), BCs (1), Predefined Fields, Remeshing Rules

1 elements have been generated on part: Part-1

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Job Adaptivity Co-execution Optimization Tools Plug-ins Help

Module: Job Model: Model-1 Step: Step-1

Model Results

Model Datab

Models (1)
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Parts (1)
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Section Sket
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Interactions
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Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)
Predefined Fields
Remeshing Rules

Job Manager

Ouvrir le "Job Manager" afin de connaitre le statut de votre étude

1 elements have been generated on part: Part-1
The job "Job-1" has been created.

SIMULIA

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Job Adaptivity Co-execution Optimization Tools Plug-ins Help

Job Manager

Name	Model	Type	Status
Job-1	Model-1	Full Analysis	None

Write Input
Data Check
Submit
Continue
Monitor...
Results
Kill

Create... Edit... Copy... Rename... Delete... Dismiss

Prener l'habite de:
1. Générer le fichier Inp (fichier de données - "Write Input")
2. Lancer votre calcul ("Submit)
3. Regarder le déroulement du calcul ("Monitor")

Model Tree:
- Composite Lay
- Engineering Fe
- Mesh
- Materials (1)
- Calibrations
- Sections (1)
- Profiles
- Assembly
- Steps (2)
- Field Output Request
- History Output Reque
- Time Points
- ALE Adaptive Mesh C
- Interactions
- Interaction Properties
- Contact Controls
- Contact Initializations
- Constraints
- Connector Sections
- Fields
- Amplitudes
- Loads (1)
- BCs (1)
- Predefined Fields
- Remeshing Rules

```
1 elements have been generated on part: Part-1
The job "Job-1" has been created.
```

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Job Adaptivity Co-execution Optimization Tools Plug-ins Help

Job Manager

Name	Model	Type	Status
Job-1	Model-1	Full Analysis	Running

Create... Edit...

Results Kill

Le statut de votre calcul passe à "Running", Puis "Completed".

Job-1 Monitor

Job: Job-1 Status: Running

Step	Increment	Att	Severe Discon Iter	Equil Iter	Total Iter	Total Time/Freq	Step Time/LPF	Time/LPF Inc
1	1	1	0	1	1	1	1	1

Log Errors Warnings Output Data File Message File Status File

Started: Abaqus/Standard

Completed: Abaqus/Standard

Search Text

Text to find: Match case Next Previous

Kill Dismiss

Le détail des itérations est alors disponible

Contact Controls
Contact Initializations
Constraints
Connector Sections
Fields
Amplitudes
Loads (1)
BCs (1)
Predefined Fields
Remeshing Rules

Annotations
Analysis
Jobs

The job input file "Job-1.inp" has been submitted for analysis.
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Job Adaptivity Co-execution Optimization Tools Plug-ins Help

Step: Step-1

Job Manager

Name	Model	Type	Status
Job-1	Model-1	Full Analysis	Completed

Write Input
Data Check
Submit
Continue
Monitor...
Results
Kill

Create... Edit... Copy... Rename... Delete... Dismiss

Lorsque le statut passe à "Completed", vous pouvez visaliser les résultats ("Results")

- Composite Lay
- Engineering Fe
- Mesh
- Materials (1)
- Calibrations
- Sections (1)
- Profiles
- Assembly
- Steps (2)
- Field Output Request
- History Output Reque
- Time Points
- ALE Adaptive Mesh C
- Interactions
- Interaction Properties
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- Constraints
- Connector Sections
- Fields
- Amplitudes
- Loads (1)
- BCs (1)
- Predefined Fields
- Remeshing Rules

```
The job input file "Job-1.inp" has been submitted for analysis.
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.
```

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Result Plot Animate Report Options Tools Plug-ins Help

Primary S Mises All

Visualization defaults

Model Results

Module: Visualization ODB: C:/Temp/Abq/Job-1.odb

Session Data

- Output Databases (1)
- Spectrums (7)
- XYPlots
- XYData
- Paths
- Display Groups (1)
- Free Body Cuts
- Streams
- Movies
- Images

Plot Contours on Deformed Shape

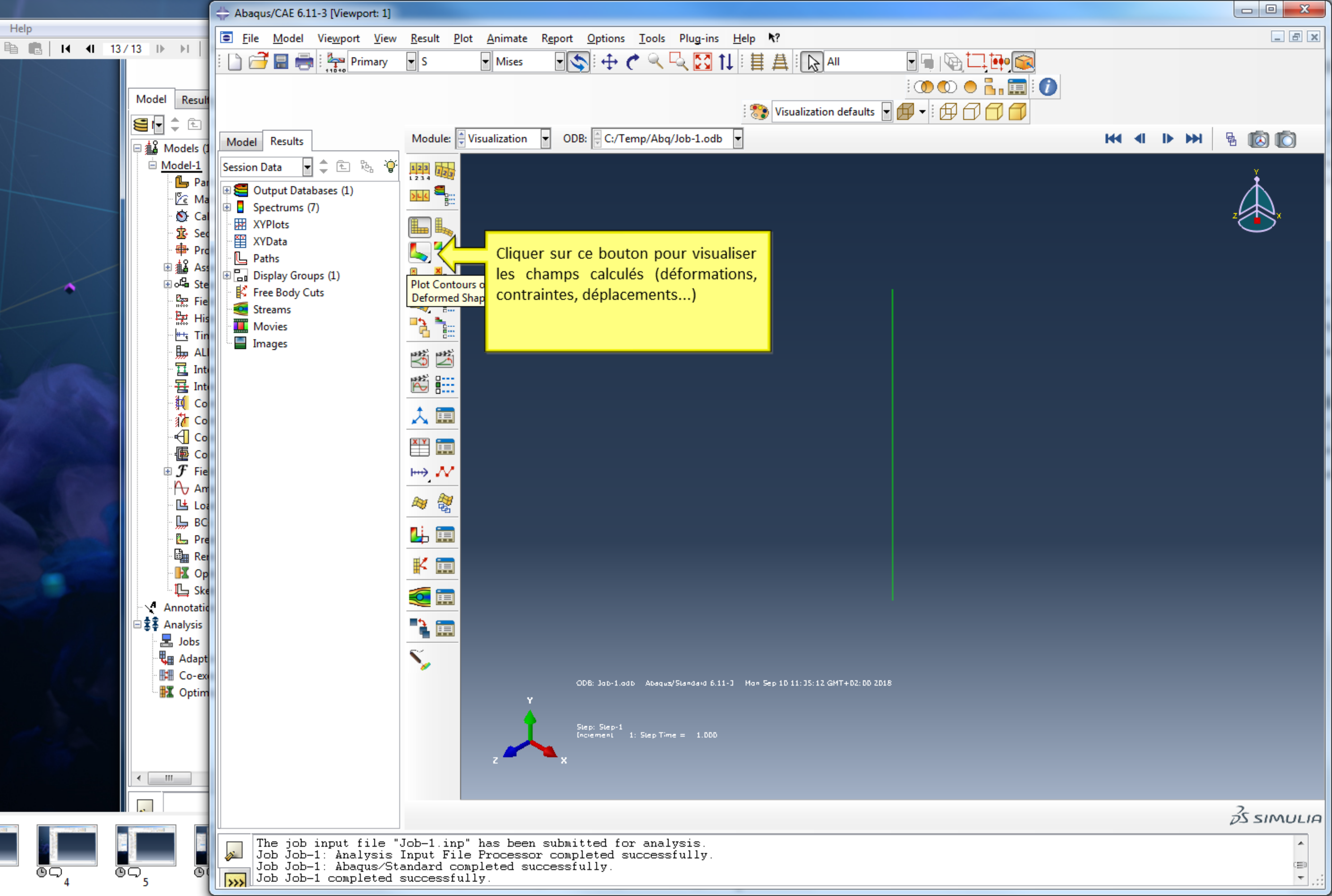
Etape 8.
Affichage des résultats

ODB: Job-1.odb Abaqus/Standard 6.11-3 Mon Sep 10 11:35:12 GMT+02:00 2018

Step: Step-1
Increment 1: Step Time = 1.000

SIMULIA

```
The job input file "Job-1.inp" has been submitted for analysis.
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.
```


Abaqus/CAE 6.11-3 [Viewport: 1]
Module: Visualization
ODB: C:/Temp/Abq/Job-1.odb
Cliquer sur ce bouton pour visualiser les champs calculés (déformations, contraintes, déplacements...)
Plot Contours o
Deformed Shap
Output Databases (1)
Spectrums (7)
XYPlots
XYData
Paths
Display Groups (1)
Free Body Cuts
Streams
Movies
Images
The job input file "Job-1.inp" has been submitted for analysis.
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Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Result Plot Animate Report Options Tools Plug-ins Help

Primary | S | Mises | All | Visualization defaults

AC YIELD
CF
E
PE
PEEQ
PEMAG
RF
S
U

Model Results

Session Data

- Output Databases (1)
- Spectrums (7)
- XYPlots
- XYData
- Paths
- Display Groups (1)
- Free Body Cuts
- Streams
- Movies
- Images

Vous retrouverez la liste des variables par défaut calculée:
E : strain (déformation)
S : Stress (contrainte)
U : Displacement (déplacement)

ODB: Job-1.odb Abaqus/Standard 6.11-3 Mon Sep 10 11:35:12 GMT+02:00 2018

Step: Step-1
Increment 1: Step Time = 1.000
Primary Var: S, Mises
Deformed Var: U Deformation Scale Factor: +8.000e+02

SIMULIA

```
The job input file "Job-1.inp" has been submitted for analysis.
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.
```

Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Result Plot Animate Report Options Tools Plug-ins Help

Primary | S | Mises | All | Visualization defaults

AC YIELD
CF
E
PE
PEEQ
PEMAG
RF
S
U

Model Results

Session Data

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SIMULIA

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Abaqus/CAE 6.11-3 [Viewport: 1]

File Model Viewport View Result Plot Animate Report Options Tools Plug-ins Help

Primary | S | Mises | All

Visualization defaults

ODB: C:/Temp/Abq/Job-1.odb

AC YIELD
CF
E
PE
PEEQ
PEMAG
RF
S
U

Model Results

Session Data

- Output Databases (1)
- Spectrums (7)
- XYPlots
- XYData
- Paths
- Display Groups (1)
- Free Body Cuts
- Streams
- Movies
- Images

Etape 9.
Analyse des résultats - A vous de jouer !

ODB: Job-1.odb Abaqus/Standard 6.11-3 Mon Sep 10 11:35:12 GMT+02:00 2018

Step: Step-1
Increment 1: Step Time = 1.000
Primary Var: S, Mises
Deformed Var: U Deformation Scale Factor: +8.000e+02

SIMULIA

```
The job input file "Job-1.inp" has been submitted for analysis.
Job Job-1: Analysis Input File Processor completed successfully.
Job Job-1: Abaqus/Standard completed successfully.
Job Job-1 completed successfully.
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