MSRE Simple Meshing

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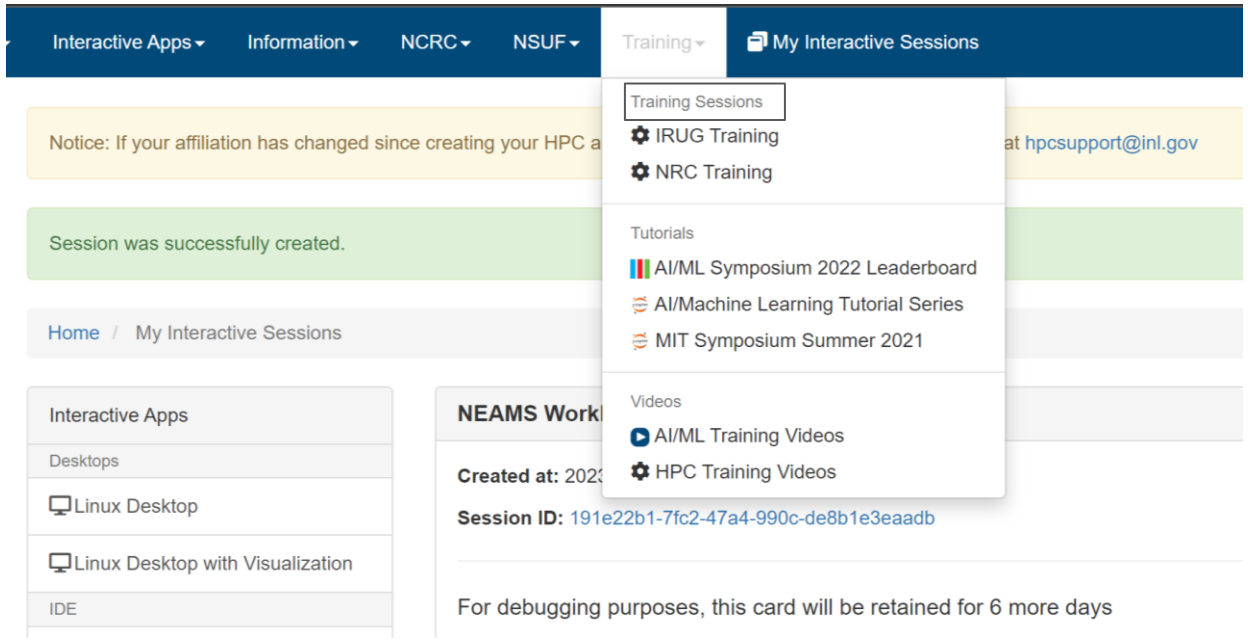
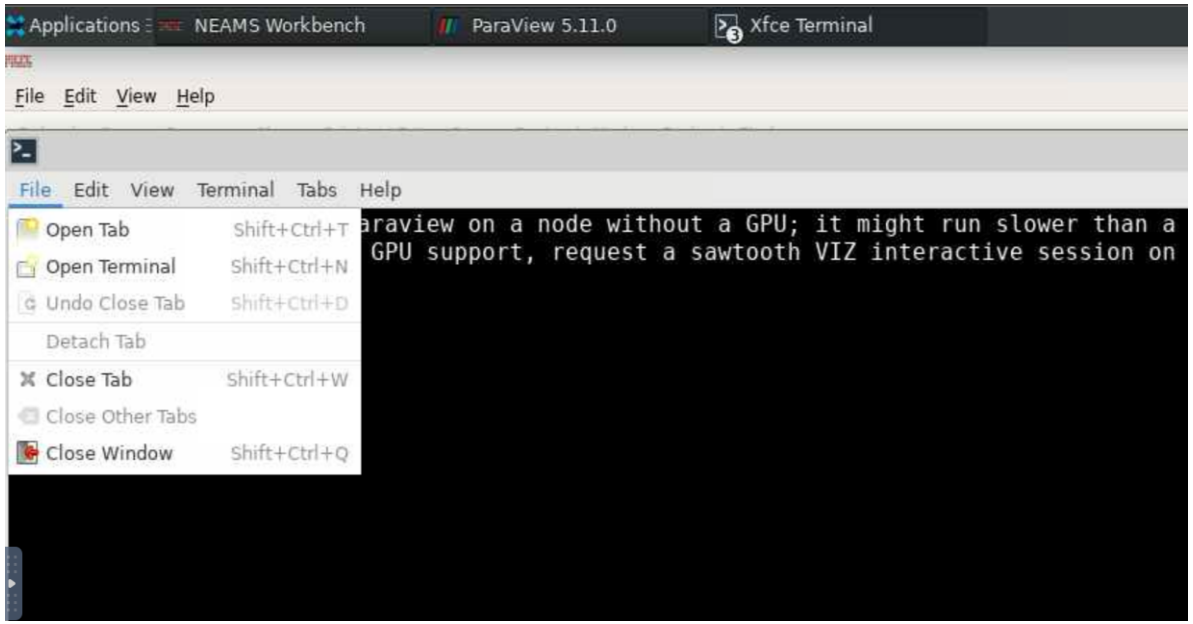
HPC-OnDemand & General Setup

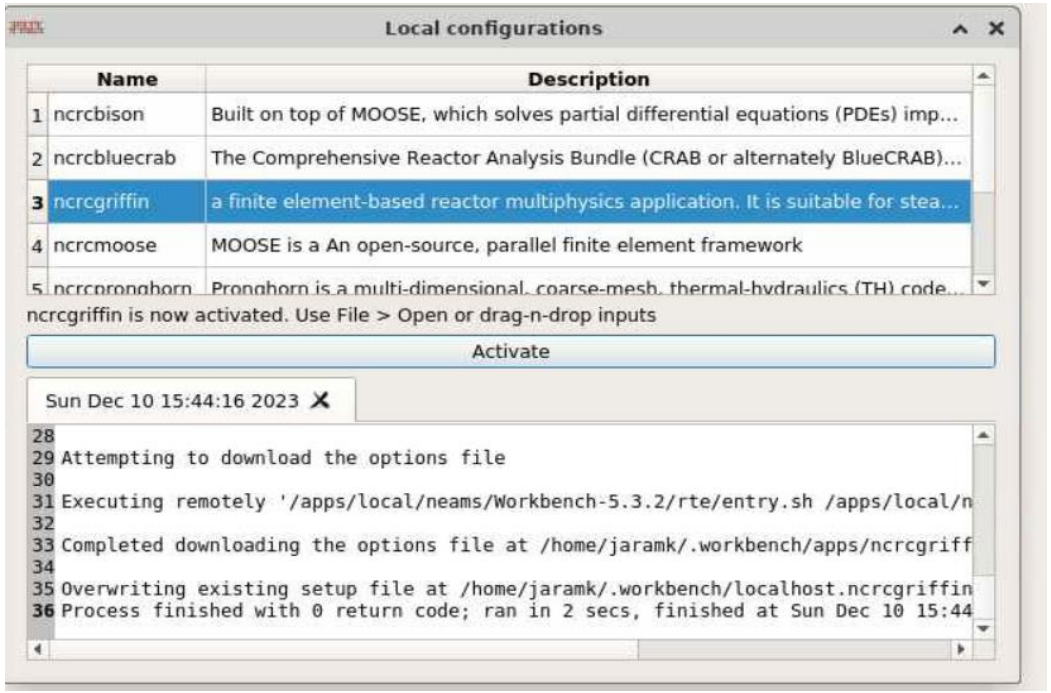


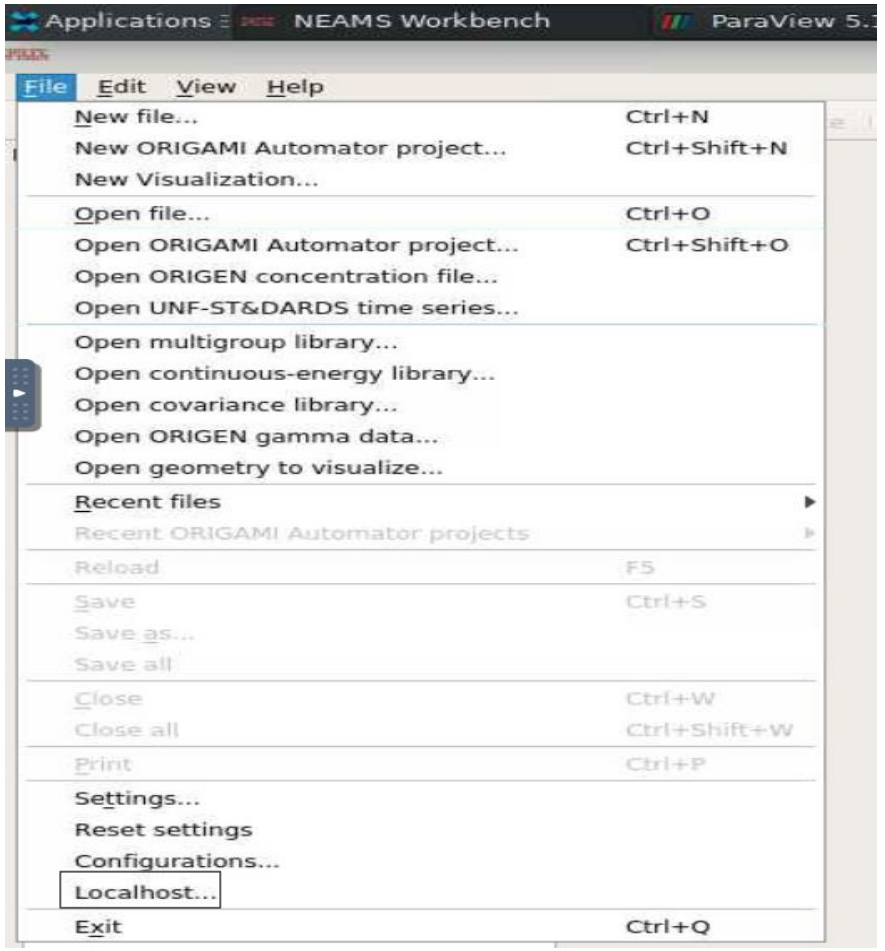


- Open new terminal:
  - Copy the workshop input/output folder
    - cp -r /projects/physor_molten_salt_training_2024/ .
  - **If not loaded you need to** Load the following modules
    - module load paraview
    - module load neams-workbench && Workbench

HPC-OnDemand & General Setup

- On workbench tab:
  - File/Localhost
  - Select ncrcgriffin and click Activate
  - Select ncrcpronghorn and click Activate
  - File/ Open file/ NRC_WS_121123





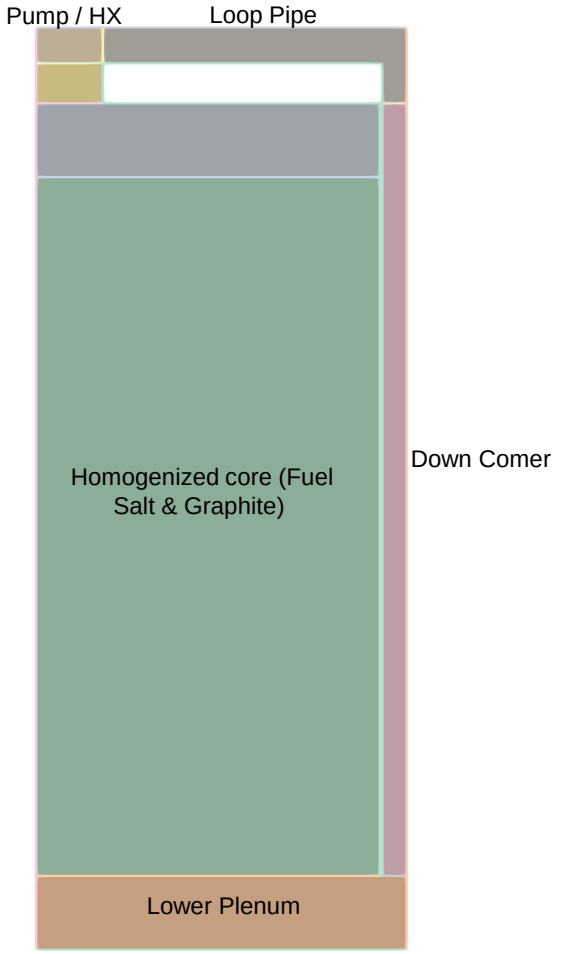
MSRE Mesh / RZ

MSRE Mesh

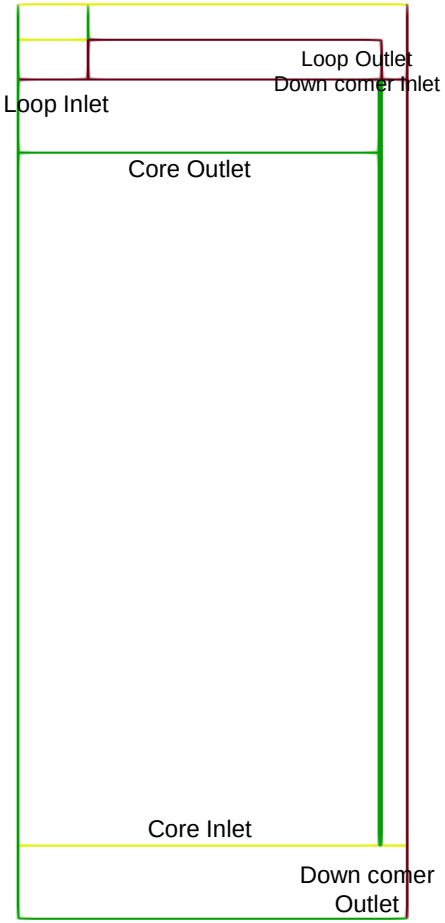
- Files:
  - Input: mesh_msre.i
  - Output: mesh_msre_in.e

```
[Mesh]
  coord_type     = 'RZ'
  type           = MeshGeneratorMesh
  block_id       = '1 2 3 4 6 7 8 9'
  block_name     = 'core  lower_plenum  upper_plenum  down_comer  core_barrel riser pump elbow'
  uniform_refine = 1

  [cartesian_mesh]
    type         = CartesianMeshGenerator
    dim          = 2
    dx           = '${fuel_pipe_R}  ${core_internal_R}  ${core_outer_gap}  ${core_barrel_thickne
    ix           = '4               8                   2                  1
    dy           = '0.1715   0.100   0.100   0.246   0.246   0.246
                    0.246   0.246   0.100   0.100   0.1715 ${piping_height} ${height_pump}'
    iy           = '6  4  4  10  10  10  10  10  4  4  6  4 4'
    subdomain_id = ' 2  2  2  2  2
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     3  3  3  6  4
                     7  10 10 10 9
                     8  9  9  9  9'
  []
```



Defined blocks



Defined Sidsets

MSRE Mesh

```
[Mesh]
  coord_type     = 'RZ'
  type           = MeshGeneratorMesh
  block_id       = '1 2 3 4 6 7 8 9'
  block_name     = 'core  lower_plenum  upper_plenum  down_comer  core_barrel riser pump elbow'
  uniform_refine = 1

  [cartesian_mesh]
    type         = CartesianMeshGenerator
    dim          = 2
    dx           = '${fuel_pipe_R}  ${core_internal_R}  ${core_outer_gap}  ${core_barrel_thickne
    ix           = '4               8                   2                 1
    dy           = '0.1715   0.100   0.100   0.246   0.246   0.246
                    0.246   0.246   0.100   0.100   0.1715 ${piping_height} ${height_pump}'
    iy           = '6  4  4  10  10  10  10  10  4  4  6  4 4'
    subdomain_id = ' 2  2  2  2  2
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     1  1  1  6  4
                     3  3  3  6  4
                     7  10 10 10 9
                     8  9  9  9  9'
  []
```

```
  [loop_boundary]
    type           = SideSetsBetweenSubdomainsGenerator
    primary_block  = '9 7 3'
    paired_block   = '10'
    input          = cartesian_mesh
    new_boundary   = loop_boundary
  []
  [core_in]
    type           = SideSetsBetweenSubdomainsGenerator
    primary_block  = '1'
    paired_block   = '2'
    input          = loop_boundary
    new_boundary   = core_in
  []
  [core_out]
    type           = SideSetsBetweenSubdomainsGenerator
    primary_block  = '1'
    paired_block   = '3'
    input          = core_in
    new_boundary   = core_out
  []
  [block_delete]
    type           = BlockDeletionGenerator
    input          = core_out
    block          = '10'
  []
```

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