

# Boundaries

## Advanced course

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# Patch type

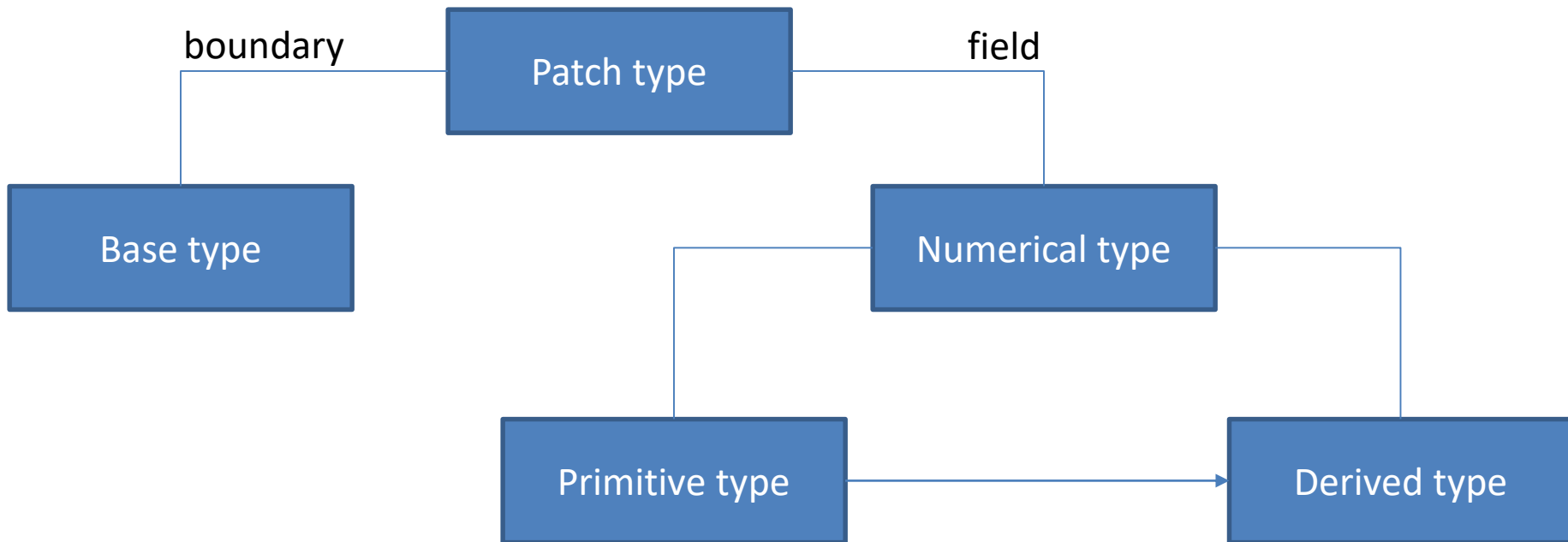
- Base type
  - Specifies the patch type and the associated faces
  - Location: `\constant\polyMesh\boundary`
- Numerical type:
  - Specifies the numerical type and the associated value
  - Can be primitive or derived
  - Location: field files under the time directories, e.g. `\0\U, 0\P, ...`

```
rotor
{
    type            wall;
    inGroups        1(wall);
    nFaces          3179;
    startFace       355492;
}
```

```
rotor
{
    type            fixedValue;
    value           uniform (0 0 0);
}
```

# Patch type

- Overview



- Web: <http://www.openfoam.org/docs/user/boundaries.php>

# Base type

- patch
  - generic patch, no physical entity (except for “wall” variant)
  - E.g. Inlet, outlet patches
- wall
  - patch that coincides with a wall
  - represents physical surface to which wall functions can be applied
- Symmetry
  - For the faces located on a symmetry plane
- empty
  - used for front and back of 2D simulations
  - e.g. Cavity flow tutorial
- wedge
  - The one-cell-thick slice used in axi-symmetric setups
- cyclic
  - 2 physically connected patches
- Processor
  - Boundary between neighbouring cells that are computed on different processors

# Primitive type

- `fixedValue`
  - Specify the value of  $\phi$  (scalar or vector)
- `fixedGradient`
  - Specify the normal gradient of  $\phi$  (scalar)
- `zeroGradient`
  - Normal gradient of  $\phi$  is zero
- `calculated`
  - Boundary field  $\phi$  derived from other field
- `mixed`
  - Mixed `fixedValue`/`fixedGradient` condition
- `directionMixed`
  - Mixed with difference between normal & tangential direction

# Derived type

- Patch types based on the primitive types
- Overview:

