Large scale Finite Element solvers for the large eddy simulation of incompressible turbulent flows

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UPC BARCELONATECH

1. Motivation

2. Residual-based VMS

3. Mixed FE VMS

4. Segregated Runge-Kutta

5. Segregated VMS

6. Conclusions

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Thesis motivation

Highly scalable Finite Element (FE) framework for Large Eddy Simulations (LES) of incompressible turbulent flows

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1. Variational MultiScale (VMS) methods as LES models.
2. Time integration schemes with velocity-pressure segregation.

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Highly scalable Finite Element (FE) framework for Large Eddy Simulations (LES) of incompressible turbulent flows

How to get there?

1. Variational MultiScale (VMS) methods as LES models.
2. Time integration schemes with velocity-pressure segregation.
3. Highly scalable algorithms based on Domain Decomposition (DD) and block preconditioners.

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Step by step...

- Residual-based VMS as LES models.

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- Scalable solvers.

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   - Formulation
   - Energy statements
   - Numerical experiments
   - Conclusions

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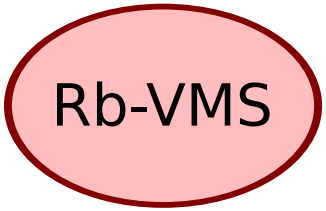

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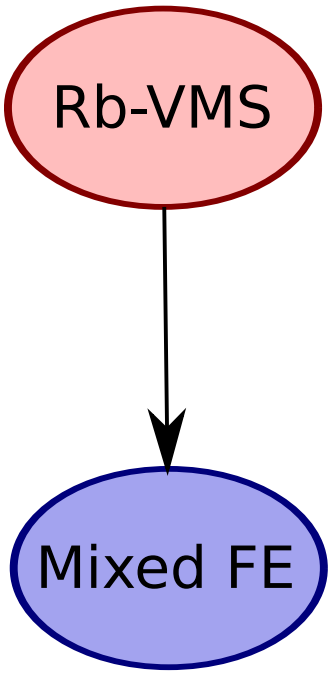

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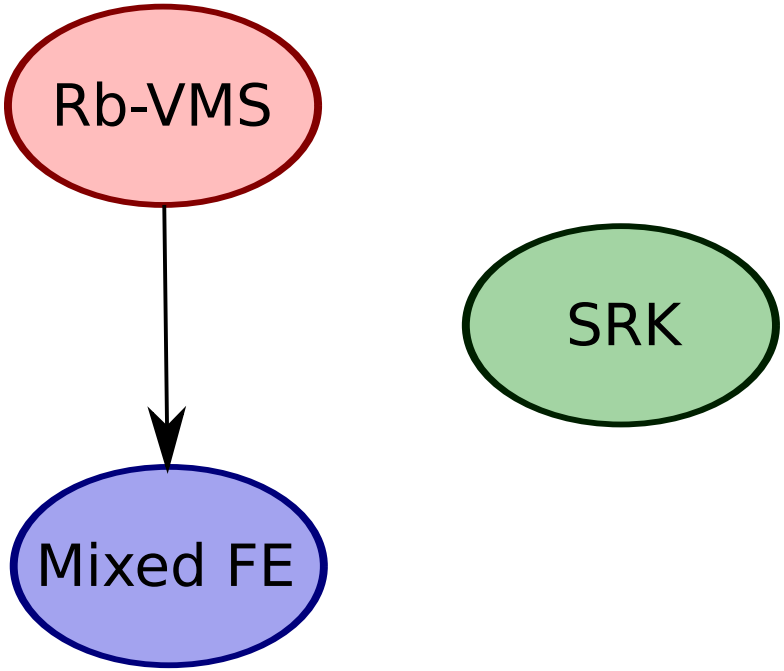

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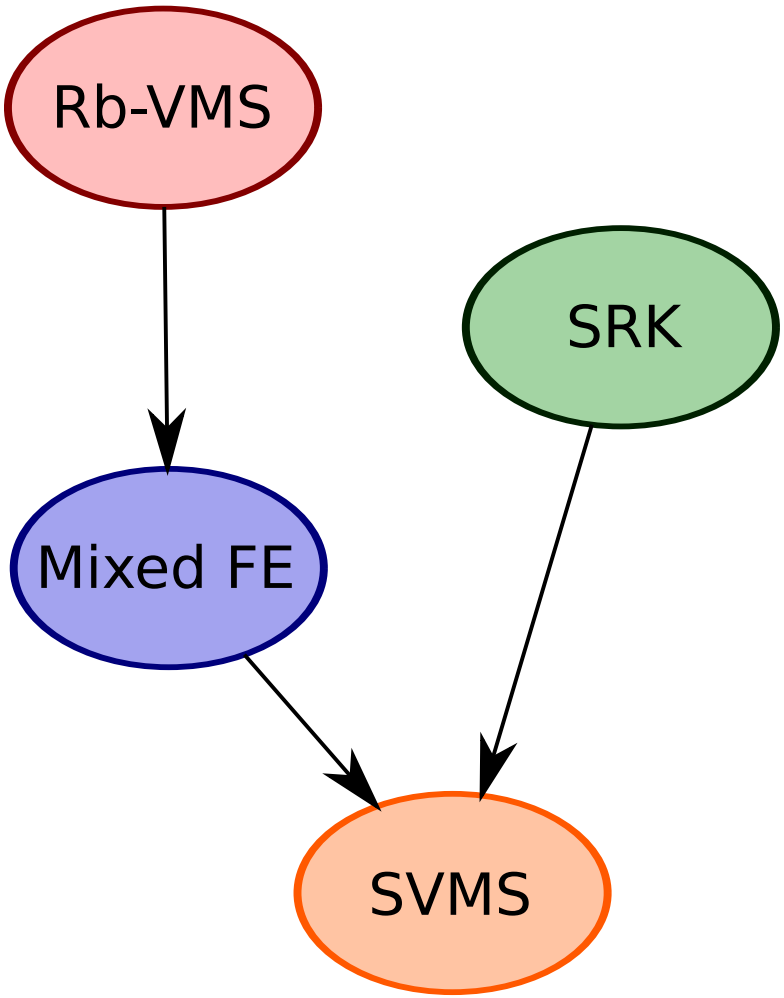

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Outline

- Line 1.

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- Line 1.
- Line 2.
  Less formal

Outline

- Line 1.
- Line 2.
  Less formal
- Line 3.
  Less formal, different color.

Blocks

Standard Block

This is a standard block.

Example Block

This is an example block.

Alert Block

This is an alert block.

Questions?