Flow Around a Cylinder Using ALE and IBM Methods

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# Overview

This project examines the flow around a cylinder using Arbitrary Lagrangian-Eulerian (ALE) and Immersed Boundary Method (IBM) approaches.

# Installation Instructions

## 1. Download Ubuntu

To run this project, you'll need to install Ubuntu. Depending on your Ubuntu version, follow the appropriate instructions at the following link:

- [FOAM Extend 4.1 Installation on Ubuntu](https://openfoamwiki.net/index.php/Installation/Linux/foam-extend-4.1/Ubuntu)

## 2. Install FOAM Extend 4.1 and OpenFOAM 9

After setting up Ubuntu, install FOAM Extend 4.1 and OpenFOAM 9 by following the detailed guide available here:

- [Installation Guide for Ubuntu, OpenFOAM 9, FOAM Extend 4.1, GeochemFoam, and ParaView](https://www.poresoftlab.com/post/how-to-install-ubuntu-openfoam-9-foam-extend-4-1-geochemfoam-and-paraview-on-windows-10)

# Running the IBM Model

1. \*\*Activate FOAM Extend 4.1\*\*: Open a terminal in Ubuntu and activate FOAM Extend 4.1.

2. \*\*Navigate to Your Case Study Directory\*\*: Use the `cd` command to go to the location of your case study files.

3. \*\*Clean Up\*\*: Run the clean command to prepare your environment.

4. \*\*Execute the Run Command\*\*: Start the simulation by executing the run command.

5. \*\*Completed\*\*: Your IBM model should now be running.

# Running the ALE Model

1. \*\*Open Ubuntu\*\*: Start Ubuntu on your machine.

2. \*\*Navigate to Your Case Study Directory\*\*: Use the `cd` command to go to the location of your case study files.

3. \*\*Run the AllRun Command\*\*: Execute the `AllRun` command file to start the ALE model simulation.

4. \*\*Completed\*\*: Your ALE model should now be running.