

# Computational Fluid Dynamics Group

## Particle Dispersion Prediction in Idealized Mouth-Throat Geometry (MTG) using Wall-Modeled Large Eddy Simulation

### Background: Prediction of particle transport in MTG is to be assessed

Particle-laden flows are involved in many real-life applications, from engineering and medical applications to natural phenomena. As being one of the main medical applications for particle tracking, this project aims to simulate drug delivery in pulmonary systems through predicting particle dispersion in a mouth throat geometry model.

### Current status at LSM:

Investigation of Wall-Modeled Large Eddy Simulation of particulate flows (WMLES).

### Your Task:

Perform hybrid RANS/LES simulations on Merlin HPC cluster using the research CFD code T-Flows or ANSYS Fluent .

The study will address the capability of the elliptic relaxation hybrid RANS/LES (ER-HRL) model to predict particle dispersion in an idealized mouth throat geometry (MTG). The model deploys a four-equation RANS mode in the wall region and switches to the LES dynamic model away from the wall using an active blending function to bridge RANS/LES interface.

