



**TOR VERGATA**  
UNIVERSITÀ DEGLI STUDI DI ROMA

Dipartimento di Fisica



**European Research Council**  
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## ***Seminar***

Wednesday, 7 February 2024 - h. 14:00

*Fisica della Materia room (Department of Physics)*

### **Elisa BELLANTONI**

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## **“A Lattice Boltzmann Approach for Fluid Flows on Spherical Surfaces”**

### ***Abstract***

Fluid flows on curved manifolds appear in a wide range of physical systems in nature, from the interface rheology of soap bubbles, to geophysical flows, to applications in the study of electrons' motion in exotic materials. The spherical surface is especially relevant for the modeling of geophysical flows in the oceans and atmosphere, where the Earth is approximated as a sphere. In this talk I will present a lattice Boltzmann method developed to treat spherical surfaces via curvilinear coordinates and finite difference schemes. The method is validated by deriving analytically the solutions to two benchmark flows with axial symmetry. Some applications to fully 2D flows are also presented.

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(P.I. Prof. Luca Biferale)***

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