



LABORATOIRE INTERDISCIPLINAIRE DE PHYSIQUE  
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## Internship proposal M1MSIAM Mathematical Modelling and Numerical simulations of Red Blood Cells

Grenoble, December 15th 2016

- **Duration:** 2 or 4 months
- **Supervision:**
  - Mourad ISMAÏL (Applied Mathematics)
- **Paid internship if 4 months**
- **Application:**
  - Send a cover letter and a detailed CV to [Mourad.Ismail@univ-grenoble-alpes.fr](mailto:Mourad.Ismail@univ-grenoble-alpes.fr)

### Prerequisites:

- Finite Element Method and advanced C++ programming

The aim of this internship is to study the modelling and numerical simulation of Red Blood Cells (RBCs) suspensions in 2D. We will be also interested in 3D simulation of a single RBC. We have already developed a dedicated framework using our open source Library FEEL++ (<http://www.freelpp.org>). This framework is based on Stokes/Navier-Stokes equations coupled with a Level Set Method. To carry out realistic numerical simulation, we have to handle contacts between RBCs in the case of concentrated suspension. To use the FEEL++ Library, the student must have a good skill in C++ programming.