

Non-contact Three-Dimensional Measurements at an Extruder Outlet

The research institute "Institute Pascal" of University Clermont Auvergne is looking for a highly motivated and talented individual for a postdoctoral position in the field of Experimental Mechanics. The position, whose financial support is already granted, is part of the **MaDiGo** project of the **Factolab** joint laboratory between the Institute Pascal and Michelin.

Overview

This postdoctoral project is part of the **MaDiGo** project, which aims to develop measurement and characterization tools for rubber throughout the tire manufacturing process. Specifically, this project will focus on a particular stage where the rubber is shaped by extrusion. The project aims to develop a tool based on stereovision to measure the 3D shape of the extrudates in the initial millimeters following the extruder nozzle exit. This involves equipping a research prototype extruder with various optical means (cameras, projectors, lights) to capture and analyze the surface deformations of the extrudate throughout the process. The project addresses the challenges of understanding post-extrusion relaxation phenomena and contributes to improving material behavior models.

Context

The "Experimental Mechanics" (EM) team of the **M3G** axis at the Institute Pascal, comprising X. Balandraud, B. Blaysat, M. Grédiac, and T. Jailin, is recognized for its expertise in developing and using advanced test and measurement methods in experimental mechanics. The team aims to enrich knowledge on the thermomechanical behavior of materials and structures in real-life situations and to propose and validate increasingly sophisticated models describing their behavior. The postdoctoral researcher will join this dynamic team, contributing to multidisciplinary efforts in experimental and numerical mechanics.

Missions

- Developing and equipping an extruder with advanced optical means.
- Reconstructing the topography of the extrudate at the extruder outlet.
- Analyzing data to understand post-extrusion relaxation phenomena.
- Collaborating with the research team and industrial partners, particularly Michelin.

Desired profil

- Ph.D. in mechanical engineering, applied physics, or related fields.
- Experience in stereovision and image processing.
- Skills in modeling and numerical simulation.
- Ability to work independently and in a team.
- Proficiency in English and/or French.

Conditions

- 18-month contract.
- Location: Institut Pascal, Clermont-Ferrand, France.
- Salary according to university standards.

Application

- Send your CV, cover letter, and references to benoit.blaysat@uca.fr.