



UNIVERSITÉ —  
— PARIS-EST



## **Job offer: Post-doctoral position on parametric shape optimization in hydraulic**

**Saint-Venant Hydraulics Laboratory, Université Paris Est  
(joint research unit Ecole des Ponts ParisTech, EDF, Cerema)  
Location: EDF Lab Chatou (France)**

The Saint-Venant Hydraulics Laboratory is a joint research laboratory between Ecole des Ponts ParisTech (ENPC), Electricité de France R&D (EDF R&D) and Cerema. This gives it a unique position in the field of applied fluid mechanics, at the interface between academy and industry.

The Saint-Venant Hydraulics Laboratory seeks to fill a 18 month post-doctoral position in the fields of parametric shape optimization in application of hydraulic problems:

- Structure. Shifting, resizing and rotating river and coastal protection structures to optimize selected flow variables to a desired stable state;
- Zone. Identifying optimum zones to maximize sustainability and minimize costs.

The aim of this post-doctoral position is to provide an efficient numerical tool based on TELEMAC system (widely used open-source code [www.opentelemac.org](http://www.opentelemac.org)) able to deliver optimal shape design for hydraulic engineering applications. The purpose of the present work is to develop methods to solve the optimization problem based on derivative-free and gradient algorithms. These algorithms will be tested on a simplified configuration and then on industrial cases.

Successful applicants should, by the start of the appointment, have a Ph.D., or equivalent experience in Applied Mathematics, Applied Physics, Computer Sciences or Mechanical/Civil Engineering. The use and development of high performance numerical computing are highly desirable. The researcher will be employed by Ecole des Ponts ParisTech (ENPC). Salary and benefits will be commensurate with qualifications and experience.

### **About Saint-Venant laboratory and the host research team:**

The Saint-Venant laboratory is actively engaged in fundamental and applied research, and its research activities are organized along three main themes: (A) Waves and marine hazards, (B) Modeling and simulation of free-surface flows, (C) Sediment transport and morphodynamics.

The laboratory has access to a unique variety of facilities, such as the 8000 m<sup>2</sup> of experimental facilities and the development of high-performance Computational Fluid Dynamics models for environmental flows and transport processes, including the open-source Telemac-Mascaret modelling system (<http://www.opentelemac.org>). The laboratory is located on the EDF Lab site in Chatou (France), about 15 km from Paris downtown.

More information about our laboratory can be found at: <http://www.saint-venant-lab.fr>

## How to apply:

Applicants should send to Dr. Riadh Ata and Dr. Cedric Goeury (see e-mail addresses below): a cover letter and CV. All applications completed by March 31st, 2016 will receive full consideration, but candidates are urged to submit all required material as soon as possible. Applications will be accepted until the position is filled.

For additional information, please contact:

- Dr. Riadh Ata [EDF and Saint-Venant Laboratory], e-mail: [riadh.ata@edf.fr](mailto:riadh.ata@edf.fr)
- Dr. Cedric Goeury [EDF], e-mail: [cedric.goeury@edf.fr](mailto:cedric.goeury@edf.fr)