E2S-UPPA and TOTAL are jointly offering a

Post-Doctoral position "Simultaneous determination of density and composition in a dual energy context" (100%)

Why joining us?

Be part of change: Pau University (E2S-UPPA) is one of only 18 institutes in entire France that receive significant financial support from the French government to become a recognized institute on the international scene. E2S-UPPA's ambitions rely on core competences in Energy and Environment, backed by strong relationships with big international companies, such as the energy major TOTAL. More info on https://e2s-uppa.eu/.

A unique region: Whether you like surfing or skiing, hiking or biking, Pau is the place to be. With an Olympic swimming pool, a wild-water kayak track, a hippodrome and the second largest omnisport stadium in entire France, Pau has much to offer. Without mentioning that Pau's rugby team plays in the first class competition ("top 14") and that the city annually welcomes both the Tour de France and the World Touring Car Championship. However, you do not need to be a sports fanatic to feel at home in Pau thanks to its rich cultural program, fine restaurants and a pleasing climate. More info on http://www.pau.fr/.

Chair of excellence: UPPA-E2S, CNRS and TOTAL joined forces to tackle the most challenging problems in the energy sector. To that extent, they jointly invest 5.5M€ in a new state-of-the-art imaging centre and seek to recruit excellent PhD's and postdocs. The postdoc position described below is part of that ambitious endeavour. More info on https://e2s-uppa.eu/en/research/chairs-of-excellence/chair-for-x-ray-imaging.html.

Project summary

Tomography is an image reconstruction technique that leans strongly on large-scale numerical mathematics and computational science. The technique has applications in virtually any sector of society, ranging from medicine, over non-destructive testing and metrology, up to archeology and art. Conventional tomography yields qualitative morphological information about the investigated object. In contrast, dual energy tomography holds the promise to provide quantitative estimates of the material density and composition at each location in the sample. These methods were initially developed for medical applications, and have been successfully used in geosciences at the core scale. Applications at the pore scale suffer from a number of problems, such as beam hardening and image noise. Furthermore, the range of atomic numbers encountered in geomaterials is much larger than in the human body. We seek an ambitious postdoc who will devise, implement and validate an accurate dual-energy reconstruction method for geomaterials.

Your tasks

- You develop novel reconstruction methods for dual-energy tomography, and benchmark your methods against existing algorithms.
- You publish your work in high quality journals and present at international conferences.
- You participate in the social life of the lab.

Our offer

- An exciting research project in a dynamic context.
- An ISO-certified research environment with state-of-the-art instrumentation.
- A close collaboration with the imaging team of TOTAL in Pau.
- The possibility to guide PhD students.

Desired profile

We are looking for a highly motivated, communicative person with interest in the proposed research project.

- The candidate should hold a PhD degree in computer science, physics, mathematics, or another discipline that relates to the proposed project. Excellent programming skills in C++ and/or Cuda are a must. Knowledge of Python is a plus. Expertise in tomographic image reconstruction, inverse problems or optimization is an asset.
- The candidate should have the ability to efficiently perform independent research. He/she should also possess the necessary verbal and written communication skills to collaborate effectively in a team environment and to be capable of clearly explaining technical information to a non-technical audience.
- Fluency in English is required. Knowledge of French is an asset.

Applications

Interested candidates are invited to electronically submit their CV, motivation letter, diploma copies as well as the names and contact information of at least two references to Peter Moonen (peter.moonen@univ-pau.fr). Any other way of applying will not be considered. We consider until a suitable candidate has been found.

For further information please contact Peter Moonen (peter.moonen@univ-pau.fr).