Postdoctoral Researcher in Advancing Methodology and Analysis Tools for Time-Resolved Structural Biology

The mission of the postdoctoral researcher is to advance data analysis tools for time-resolved serial X-ray crystallography (TR-SX) and cryo-electron microscopy (cryo-EM). The researcher will focus on the development and optimization of the Xtrapol8 software, as well as the analysis of time-resolved structural data.

The Institute for Structural Biology: The Institute for Structural Biology (IBS, France) is located within the Grenoble Science Park (ESRF/ILL/EMBL/IBS), and is a major national and international player in the field of integrated structural biology. Its mission is to drive forward research in structural biology, key to understanding fundamental biological mechanisms. It is a research center that offers access to state-of-the-art technical platforms, provides scientific training and creates opportunities for collaboration. As a joint research unit (CEA-CNRS-UGA), the IBS comprises 20 research groups, each of which offers a multidisciplinary approach to study the frontiers of biology, physics and chemistry. The IBS is home to nearly 300 staff members, comprising researchers, doctoral students, engineers and technicians, working together in a dynamic and multicultural environment.

The DYNAMOP group: The *Dynamics and Kinetics of Molecular Processes* (DYNAMOP) group, headed by Dr. Martin Weik, studies the structure and dynamics of proteins using X-ray diffraction and scattering, and neutron spectroscopy. The group is divided in two teams: *Structural Protein Dynamics* (SPD, led by Dr. Martin Weik) and *Serial NanoCrystallography* (SNaX, led by Dr. Jacques-Philippe Colletier). The group comprises approximately 15 members, including permanent researchers, postdoctoral researchers, PhD students and technicians. The group strives for a mix of nationalities and attaches great important to gender equality and personal well-being.

Context of the postdoctoral position: The postdoctoral position is available in the SNaX team, which specializes in serial (time-resolved) crystallography and developing software for time-resolved X-ray crystallography (NanoPeakCell and Xtrapol8). The project will be conducted under the supervision of and in close collaboration with Dr. Elke De Zitter, Dr. Jacques-Philippe Colletier and Dr. Nicolas Coquelle, all permanent members in the DYNAMOP group. The postdoctoral project is within the framework of a collaboration with the CristallinaMX group (Paul Scherrer Institut (PSI), SwissFEL, Switzerland).

Main activities: The main activities are in function to improve and expand Xtrapol8:

- Develop tools for bootstrapping, and singular value decomposition.
- Improve the methods and theoretical basis to estimate occupancy.
- Implement real-space methods.
- Modularize and parallelize the Xtrapol8 code.
- Analyze time-resolved crystallographic and cryo-EM datasets.
- Participate in TR-SX experiments at SwissFEL.
- Publish results in peer-reviewed journals and present findings at international conferences.
- Work closely with the DYNAMOP group at IBS and the CristallinaMX team.

Required and preferred skills and competences:

- PhD in Mathematics, Physics, Computational Biology, Structural Biology, Biophysics, or a related field.
- Strong programming skills in Python. Experience with other programming languages is advantageous.
- Familiarity with time-resolved techniques in crystallography or cryo-EM is highly desirable.
- Proven track record of scientific publications in peer-reviewed journals.
- Excellent written and oral communication skills in English (minimum B2 level). French language skills are beneficial. Non-French-speaking candidates are expected to acquire a basic proficiency in French to facilitate communication and integration into the laboratory.
- Ability to work independently and collaboratively in an international team.

Application instructions: Interested candidates should send their application to Dr. Elke De Zitter (elke.de-zitter@ibs.fr) and Dr. Jacques-Philippe Colletier (colletier@ibs.fr). The application should contain a cover letter detailing motivation and relevant experience and a curriculum vitae, including a list of publications and contact information for 2-3 references.

More Information:

Contract Type	Fixed-term (CDD)
Duration	36 months
Expected Start Date	01/05/2026 (flexible)
Work Quota	Full-time
Contact information	Dr. Elke De Zitter; elke.de-zitter@ibs.fr
	Dr. Jacques-Philippe Colletier (colletier@ibs.fr)

Useful websites:

Xtrapol8
DYNAMOP group
SNaX team
NanoPeakCell