

INTERNSHIP PROGRAM FOR INTERNATIONAL STUDENTS

INTERNSHIP SUBJECT FORM

Name of the Host Laboratory	CMAP
Website of the Host Laboratory	http://www.cmap.polytechnique.fr/
Research Group	EDP pour la physique
Internship Supervisor	R.G. Novikov
Internship Subject	Tomography and inverse scattering
Student's level	<input checked="" type="checkbox"/> Advanced Undergraduate Students (3 rd or 4 th year) <input checked="" type="checkbox"/> Master's students (1 st or 2 nd year) <input type="checkbox"/> PhD students
Proposed Duration	<input checked="" type="checkbox"/> 3 months <input type="checkbox"/> 4 months <input type="checkbox"/> 5 months <input type="checkbox"/> 6 months
Prerequisites	A good acquaintance with the Fourier analysis, in particular, and functional analysis, in general, is necessary.
Internship description (max. 15 lines)	<p>The tomography is known, first of all, as a research area related with the problem of finding a structure of some object from its radiographs. At present, in addition to this X-ray tomography, several other tomographies are also known, where instead of X-ray photographs some other spectral data are used. In addition, tomographical problems are very much related with problems of inverse scattering. All these problems arise in medical imaging, non-destructive testing and different domains of physics. Related mathematics involves, in particular, integral geometry, partial differential equations, theory of solitons, numerical analysis.</p> <p>The objective of this stage is to give an introduction to this research domain.</p>