

Application for a:	Incoming Scheme NEWFELPRO Fellowship for experienced researcher
Proposal Acronym:	FISSION
Proposal Title:	Energy density functional description of fission
Research area(s):	Physics PHY
Research sub-disciplines:	Fundamental Constituents of Matter, Nuclear Physics
Category of research:	basic
Duration in months:	24
Keywords:	Fission, Relativistic nuclear energy density functionals, Finite temperature formalism, Collective Hamiltonian model, Adiabatic time-dependent density functional theory
Abstract:	<p>Nuclear fission is an extremely complex reaction process in which a single atomic nucleus rearranges its constituent nucleons into two separate nuclei and, in addition, free neutrons and photons are often produced. The fission reaction releases vast amounts of energy in the form of gamma rays and kinetic energy of the fragments. The fission process plays an important role as a source of energy, but also places constraints on the r-process nucleosynthesis of chemical elements.</p> <p>The complete understanding of physical phenomena at the femtoscale is not possible using a single theoretical approach, however at the present time the only comprehensive approach to the structure of nuclei over the whole chart of nuclides is provided by the microscopic energy density functional framework (EDF). The FISSION project is focused on developing a consistent, reliable and predictive relativistic EDF-based model to describe the fission process.</p>
Does this proposal possess any of the sensitive ethical issues detailed in ethical issues table?	No