Proposal Acronym	AstroEDF
Proposal Title:	Relativistic Nuclear Energy Density Functional for Astrophysical Applications
Surname:	Paar
First name(s):	Nils
Research area:	Physics PHY
Sub-discipline of research area:	Fundamental Constituents of Matter (Nuclear Physics, Nuclear Astrophysics)
Category of research:	basic
[redacted]	[redacted]
Abstract:	A supernova explosion is one of the most fascinating events in the Universe, representing the end of life of a massive star and an important source of the elements in the Universe. The goal of this project is to provide a self-consistent microscopic theory framework based on the relativistic nuclear energy density functional (RNEDF), its applications in modeling astrophysically relevant weakly bound nuclei and weak interaction femto-processes, and in constraining the nuclear equation of state in supernova environment. In practical applications in nucleosynthesis and supernova dynamics simulations, the RNEDF framework will be established and employed in direct communication with user groups at the host institution. Scientific objectives will be realized within the interdisciplinary framework of theoretical nuclear physics and astrophysics that unifies modeling of complex systems and technological innovations in computational science on the emerging distributed computing environments.
Does this proposal possess any of the sensitive ethical issues detailed in ethical issues table?:	No