

Proposal Code : PDF – LIGO -0001	
Title	Evaluation of pump-down scenarios to achieve ultra-high vacuum regime in LI-VISTA facility
Abstract	<p>Laser Interferometer Gravitational-wave Observatory detects gravitational wave signals having amplitude as low as 10^{-9} nm range. Among many operational parameters essential to measure a gravitational wave signals precisely one parameter is ultra-high vacuum. The level of vacuum in a 10000 m^3 volume of LIGO vacuum envelope is $\leq 10^{-9}$ mbar. IPR has setup LI-VISTA (22m^3) facility to understand and establish the approach to achieve such low pressure in least possible time. The tasks for the PDF include understanding different pressure regimes, identify problems which may arise and mitigate them by finding suitable solutions to accomplish the functional vacuum requirement.</p>
Research Focus Areas	<p>Institute for Plasma Research (IPR) is one of the nodal agency in LIGO-India project for vacuum infrastructure. The outcome of this work will provide significant inputs to realise ultra-high vacuum (less than 10^{-9} mbar) range in LIGO vacuum system which is a prime requirement for LIGO vacuum system expected performance leading to GW detection.</p>
Qualifications	PhD in Physics
Desired Experience	Fundamental knowledge of Vacuum and vacuum equipments
Other remarks	<p>Establishing $< 10^{-9}$ mbar in large vacuum vessel in minimum possible time would be a challenging task</p>