

Titolo Tema/Progetto	Electrons to cure mirror charging and frost formation	
Esperimento CSN2/Sigla del Proponente	ET-Italia @ LNF	
Struttura INFN del proponente	LNF	
Laboratorio ospitante (Italia: LNGS, LNF, LNS,LNL, EGO, SOS-ENATTOS, TIFPA-FBK; Estero: CERN, La Palma, Malargue (AUGER), Salta (QUBIC))	LNF	
Persona di riferimento presso il laboratorio	Marco Angelucci	
Data di inizio (01/11/2024-01/04/2025, durata >= 3 mesi)		4-Nov-24
Data di fine (>= 3 mesi)		4-Jun-25
Descrizione attività (max 1000 caratteri)	<p>Electrostatic charging, and the build-up of a frost layer on cryogenic mirrors may represent two criticalities for future GW detectors. We are approaching a possible mitigation method for both issues, relying on irradiation of optics with low energy electrons (LEE, from 5 to 100 eV). LEE interact only with the top layers of any surface (some nm), are efficient in inducing gas desorption and, by properly tuning their energy, can neutralize charges of both polarities. Then, LEE irradiation seems ideal to solve both issues without damaging optics.</p> <p>The actual refinement of the method is challenging. A first step is to know how much charge is delivered (or removed) on realistic samples as a function of LEE's dose and energy, at room and cryogenic temperature. Once this has been addressed by using all surface science spectroscopies available in the laboratory, the goal is to define the electron beam parameters to induce on purpose discharging and frost desorption from surfaces.</p>	
Altre indicazioni (massimo 500 caratteri)	Laboratory and data analysis activity. Experimental techniques: SEY, XPS, RGA, Raman spectroscopy.	
Servizi offerti dal laboratorio ospitante		0
Note		0