

## The LEGEND-200 LAr instrumentation in the search of neutrinoless double beta decay

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### LEGEND-200 overview

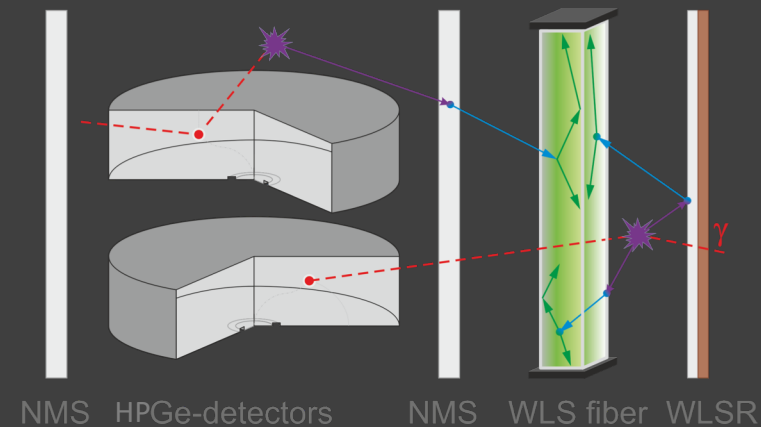
590 m<sup>3</sup> tank with  
ultra-pure water

WLSR  
cylinder

64 m<sup>3</sup> LAr  
cryostat

WLS fiber curtains +  
HPGe detector  
array inside NMS

### LAr instrumentation



- Detection of Ar scintillation light created by energy depositions in the LAr that accompanies energy depositions in the HPGe detectors;
- such background events originate from  $\alpha$ ,  $\beta$ ,  $\gamma$  or neutron interactions, originating from primordial, anthropogenic radioisotopes or cosmogenic produced unstable isotopes;
- they must be discriminated from  $0\nu\beta\beta$  decay signals, which have energy deposition inside the HPGe detectors and no energy deposition in the LAr.

### Acronyms

HPGe – high-purity germanium

LAr – liquid argon

NMS – nylon mini-shrouds

SiPM – silicon photomultiplier

WLS - wavelength shifting

WLSR – WLS reflector