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Einstein Telescope site characterization in Sardinia

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Due to its unique geophysical features and to the low population density of the area, Sos Enattos is a promising candidate site to host the Einstein Telescope (ET), the third-generation Gravitational Wave Observatory. The characterization of the Sos Enattos former mine, close to one of the proposed ET corners, started in 2010 with the deployment of seismic and environmental sensors underground. Since 2019 a new extensive array of seismometers, magnetometers and acoustic sensors have been installed in three stations along the underground tunnels, with one additional station at the surface. Two boreholes 270 m deep were excavated at the other two corners, determining the good quality of the drilled granite and orthogneiss rocks and the absence of significant thoroughgoing fault zones. These boreholes are instrumented with broadband seismometers that revealed an outstanding low level of vibrational noise in the low-frequency band of ET-LF (2-10Hz), beating the Peterson's NLNM and resulting among the quietest seismic stations in the world in that frequency band. The low seismic background and the reduced number of seismic glitches ensure that just a moderated Newtonian noise subtraction would be needed to achieve the ET target sensitivity. Active seismic campaigns have been carried out to reveal the features of the subsoil. Finally, temporary arrays of seismometers, magnetometers and acoustic sensors are deployed in the area to study the local sources of environmental noise.

Submitted on behalf of a Collaboration?

No

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