



Monday 4 July, 14:00 – 14:25

Session 3: Probing of the universe: neutrino astronomy

The Borexino experiment: past, present and future

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Borexino is a sub-MeV liquid scintillator solar neutrino detector which has been running at the Laboratori Nazionali del Gran Sasso for more than nine years. Thanks to its record levels of low intrinsic radioactivity, Borexino Phase-I performed the first detection (and then precision measurement) of the ${}^7\text{Be}$ solar neutrinos and the first direct observation of the pep neutrinos; set the best upper limit on the CNO neutrino flux and ruled out significant day-night asymmetry of the neutrino interaction rate. Borexino phase-II, with a further reduction of intrinsic contaminants following an intensive purification campaign, showed the first spectral evidence of pp solar neutrinos. Under these optimal conditions the collaboration is planning on improving the ${}^7\text{Be}$ precision measurement and the challenging sensitivity to the sub-dominant CNO neutrino flux. In addition Borexino is known in literature for the detection of geo-neutrinos and setting limits in rare processes.