LNGS SEMINAR SERIES

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The ^{22}Ne(p, γ)^{23}Na reaction studied at LUNA: results from the germanium detector based part of the experiment

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The ^{22}Ne(p,γ)^{23}Na reaction takes part in the neon-sodium cycle of hydrogen burning. This cycle is active in asymptotic giant branch stars as well as in novae and contributes to the nucleosythesis of neon and sodium isotopes. In order to reduce the uncertainties in the predicted nucleosynthesis yields, new experimental efforts to measure the ^{22}Ne(p,γ)^{23}Na cross section directly at the astrophysically relevant energies are needed. The seminar talk will report on the recently concluded first phase of the ^{22}Ne(p,γ)^{23}Na experiment at LUNA. Using a windowless, isotopically enriched ^{22}Ne gas target and two high-purity germanium detectors, selected, previously unobserved low-energy resonances were studied. The preliminary results will be summarized, and an outlook on the second phase of the experiment with a 4pi summing detector will be given.

DECEMBER 10, 2014 – 10:00 AM

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