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Alpha-capture reaction rates for 22Ne(alpha,n) via sub-Coulomb alpha-transfer and its effect on final abundances of s-process isotopes HESHANI JAYATISSA, GRIGORY ROGACHEV, YEVGENY KOSHCHIY, VLADILEN GOLDBERG, JOSHUA HOOKER, CURTIS HUNT, CORDERO MAGANA, BRIAN ROEDER, ANTTI SAASTAMOINEN, ALEXANDRIA SPIRIDON, SRITEJA UPADHYAYULA, Texas AM University, OSCAR TRIPPELLA, Department of Physics and Geology, University of Perugia, and Instituto Nazionale di Fisica Nucleare, Section of Perugia, Via A. Pascoli, 06123 Perugi — The 22Ne(α,n) reaction is a very important neutron source reaction for the slow neutron capture process (s-process) in asymptotic giant branch stars. These direct measurements are very difficult to carry out at the energy regimes of interest for astrophysics (Gamow energies) due to the extremely small reaction cross section. The large uncertainties introduced when extrapolating direct measurements at high energies down to the Gamow energies can be overcome by measuring the Asymptotic Normalization Coefficients (ANC) of the relevant states using α-transfer reactions at sub-Coulomb energies to reduce the optical model dependence. The study of the 22Ne(6Li,d) and 22Ne(7Li,t) reaction was carried out at the Cyclotron Institute at Texas A&M University. The α-ANC measurements for the near α-threshold resonances of 26Mg provide constraints for the 22Ne(α,n) reaction rate. The effect of this reaction rate on the final abundances of the s-process isotopes will be discussed.

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