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Proton Emission from ^{31}S and the Astrophysical ^{30}P$(p,\gamma)^{31}$S Reaction[1] SEAN BURCHER, K.L. JONES, J. HOOKER, University of Tennessee, J.M. ALLMOND, K.A. CHIPPS, S.D. PAIN, Oak Ridge National Laboratory, J. BURKE, R.O. HUGHES, Lawerence Livermore National Laboratory, S. AHN, H. CLARK, H. JAYATISSA, S. OTA, A. SAASTAMOINEN, S. UPADHYAYULA, Texas A&M University, N. COOPER, C. REINGOLD, A. SIMON, Notre Dame University, J.A. CIZEWSKI, Rutgers University, K. SCHMIDT, National Superconducting Cyclotron Laboratory — The ^{30}P$(p,\gamma)^{31}$S reaction rate has been identied as the largest remaining source of uncertainty in the abundances of intermediate-mass nuclei produced in classical nova explosions involving oxygen-neon white dwarfs, and is critical to interpreting the origin of certain meteoritic presolar grains. To inform the astrophysical proton capture rate, the ^{32}S$(p,d)^{31}$S reaction has been used to populate proton unbound states in ^{31}S. The Hyperion array was used to measure the reaction deuterons in coincidence with decay protons and rays. Angular correlations between the reaction products and decay protons have been measured and used to constrain the angular momentum of states in ^{31}S above the proton threshold. In addition, proton-decay branching ratios have been measured for these states and used to inform resonance strengths.

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