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Direct Measurement of Low-Energy Resonances in ^{31}P(p,α)^{28}Si and ^{35}Cl(p,α)^{32}S CATALIN MATEI, Oak Ridge Associated Universities, B.H. MOAZEN, K.Y. CHAE, K.L. JONES, R.W. KAPLER, S.T. PITTMAN, U. of Tennessee, D.W. BARDAYAN, C.D. NESARAJA, S.D. PAIN, M.S. SMITH, ORNL, J. ALLEN, K.A. CHIPPS, R. HATARIK, C. MATTHEWS, P.D. O'MALLEY, T. PELHAM, W.A. PETERS, Rutgers U., J.C. BLACKMON, M. MATOS, LSU, R.L. KOZUB, J. ROGERS, D.J. SISSOM, TTU — Reaction cycles in explosive hydrogen burning in novae and X-ray bursts influence both the energy generation and the processing of material to higher masses. The ^{31}P(p,α)^{28}Si and ^{35}Cl(p,α)^{32}S reactions are thought to lead to the formation of reaction cycles in the Si-Ar region, but the strength of these cycles depends on the (p,γ)/(p,α) reaction rate ratio. Previous attempts to measure the strength of low-energy resonances in ^{32}S and ^{36}Ar have relied on indirect methods or resulted only in setting upper limits for a number of the resonances of interest. We have measured the strength of low-energy resonances in ^{32}S and ^{36}Ar at Oak Ridge National Laboratory by using stable ^{31}P and ^{35}Cl beams and a differentially pumped windowless hydrogen gas target to detect p-α coincidences in arrays of silicon strip detectors. Details of the experimental configuration and results will be presented. *This work is supported in part by the U.S. DOE and NSF.

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