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Collective states in silicon and sulfur isotopes from N=20 to 28
C.M. CAMPBELL, D. BAZIN, M.D. BOWEN, B.A. BROWN, J.M. DINCA, D.-C. DINCA, A. GADE, T. GLASMACHER, W.F. MUELLER, H. OLLIVER, K. STAROSTA, J.R. TERRY, Department of Physics and Astronomy and National Superconducting Cyclotron Laboratory, Michigan State University, N. AOI, T. MOTOBAYASHI, H. SAKURAI, S. TAKEUCHI, K. YONEDA, RIKEN (Institute of Physical and Chemical Research), S. KANNO, Department of Physics, Rikkyo University, H. SUZUKI, Department of Physics, University of Tokyo, S.P. WEPPNER, Collegium of Natural Sciences, Eckerd College — The evolution of low-lying collective states in neutron-rich silicon and sulfur isotopes has been studied by inelastic proton scattering in inverse kinematics at the Coupled Cyclotron Facility of the NSCL. Gamma-ray detection was used to select inelastic events exciting specific bound states. New gamma-ray transitions were observed and placed into level schemes. Angle-integrated excitation cross-sections to the first 2+ state in each even-even silicon and sulfur isotope were used to determine quadrupole deformation parameters. The evolution of collectivity was examined by looking at trends of deformation parameters and level energies as functions of neutron number. Results will be compared with shell model predictions. This work was supported by NSF grants PHY-0110253, PHY-9875122, PHY-0244453, INT-0089581 and by the Japan Society for the Promotion of Science.

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