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A New Look at 29Al and 27Mg from the 18O + 14C Reaction<sup>1</sup> SAMUEL TABOR, RUTGER DUNGAN, ALEXANDER VOLYA, VANDANA TRIPATHI, BRITTANY ABROMEIT, DAVID CAUSSYN, KONSTANTINOS KRAVVARIS, REBEKA LUBNA, PEI-LUAN TAI, florida state university — It was possible to compare moderately high-spin states in a nearby pair of odd proton and odd neutron s-d shell nuclei by observing proton-gamma-gamma or alpha-gammagamma coincidences, respectively, following the fusion of long-lived radioactive 14C with neutron-rich 18O at a beam energy of 40 MeV using the FSU gamma detector array with digital data acquisition. Eight new states were seen in 29Al, all of which decay directly or indirectly to the 9/2+ level, the highest previously known spin in 29Al. Some of the new states form a very likely yrast M1 decay sequence from (15/2+) down to the 5/2+ ground state. The new states are relatively well described by pure s-d shell model calculations using the USDA interaction. By contrast the 4 new states found in 27Mg are divided between positive and negative parities reaching up to (13/2+) and (11/2-). Radiative decays of neutron unbound states in 27Mg will be discussed.

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