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Structure of $\mathbf{T}_z = 3/2$, ^{33}P Nucleus[1] REBEKA SULTANA LUBNA, VANDANA TRIPATHI, SAMUEL TABOR, PEI-LAUN TAI, Florida State Univ, PETER BENDER, Michigan State Univ — The excited states of the nucleus ^{33}P were populated by the ^{18}O(^{18}O, p-2nγ)^{33}P fusion evaporation reaction at $E_{lab} = 25$ MeV.Gammasphere was used along with the particle detector Microball to detect the γ emissions in coincidence with the emitted charged particles from the compound nucleus ^{36}S. The auxiliary detector Microball was used to select the charged particle channel and to determine the exact position and the energy of the emitted proton. The purpose of finding the position and energy of proton was to determine a more precise angle between the recoil nucleus and the emitted γ which was later employed to get a better Doppler correction. Along with the selection of the proton channel, the γ-γ coincidence technique helped to isolate ^{33}P from the other phosphorus isotopes and also reduced the contaminations from the dominant pure neutron channels. A number of transitions and states was identified that were not observed before. The 4π arrangement of Gammasphere offered an excellent opportunity to measure the angular distribution of the electromagnetic emissions leading to the assignment of the spins for most of the new states. The experimental observations were compared to the shell model calculation using

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