Abstract Submitted for the DNP15 Meeting of The American Physical Society

Microscopic Shell Model Calculations for the Fluorine Isotopes¹ BRUCE R. BARRETT, U Arizona, ERDAL DIKMEN, Suleyman Demirel U, PIETER MARIS, JAMES P. VARY, Iowa State U, ANDREY M. SHIROKOV, Iowa State U, Lomonosov Moscow State U, Pacific National U — Using a formalism based on the No Core Shell Model (NCSM), we have determined miscroscopically the core and single-particle energies and the effective two-body interactions that are the input to standard shell model (SSM) calculations [1]. The basic idea is to perform a succession of a Okubo-Lee-Suzuki (OLS) transformation, a NCSM calculation, and a second OLS transformation to a further reduced space, such as the *sd*-shell, which allows the separation of the many-body matrix elements into an "inert" core part plus a few valence-nucleons calculation. In the present investigation we use this technique to calculate the properties of the nuclides in the Fluorine isotopic chain, using the JISP16 nucleon-nucleon interaction. The obtained SSM input, along with the results of the SSM calculations for the Fluorine isotopes, will be presented.

[1] E. Dikmen, et al., Phys. Rev. C 91, 064301 (2015).

¹This work supported in part by TUBITAK-BIDEB, the US DOE, the US NSF, NERSC, and the Russian Ministry of Education and Science.

Bruce Barrett Univ of Arizona

Date submitted: 29 Jun 2015

Electronic form version 1.4