

Abstract Submitted
for the CAL09 Meeting of
The American Physical Society

Towards the first *ab initio* description of the deuterium-tritium fusion¹ PETR NAVRATIL, SOFIA QUAGLIONI, LLNL — The deuterium-tritium reaction is important for the future fusion energy generation. It is used in laser-induced fusion at NIF and magnetic-confinement fusion at ITER. Even though it has been well studied experimentally, its first principles theoretical understanding is important. We are building a new capability to describe light-ion fusion reactions from first principles, known as *ab initio* NCSM/RGM approach [1,2]. We have completed a promising preliminary study of nucleon-nucleus scattering, particularly $n-{}^4\text{He}$ scattering below the $d+{}^3\text{H}$ threshold [1,2]. Now we are developing the deuterium-nucleus formalism that coupled with the nucleon-nucleus basis will allow us the first *ab initio* calculation of the ${}^3\text{H}(d,n){}^4\text{He}$ fusion. We will present recent results and work in progress.

[1] S. Quaglioni and P. Navratil, Phys. Rev. Lett. **101**, 092501 (2008).

[2] S. Quaglioni and P. Navratil, Phys. Rev. C **79**, 044606 (2009).

¹Prepared by LLNL under Contract DE-AC52-07NA27344. Support from the U.S. DOE/SC/NP (Work Proposal No. SCW0498), LLNL LDRD Grant No. PLS-09-ERD-020, and U. S. Department of Energy Grant DE-FC02-07ER41457 is acknowledged.

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Date submitted: 13 Oct 2009

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