

Lawrence Livermore National Laboratory

SciDAC Reaction Theory Year-5-End plans

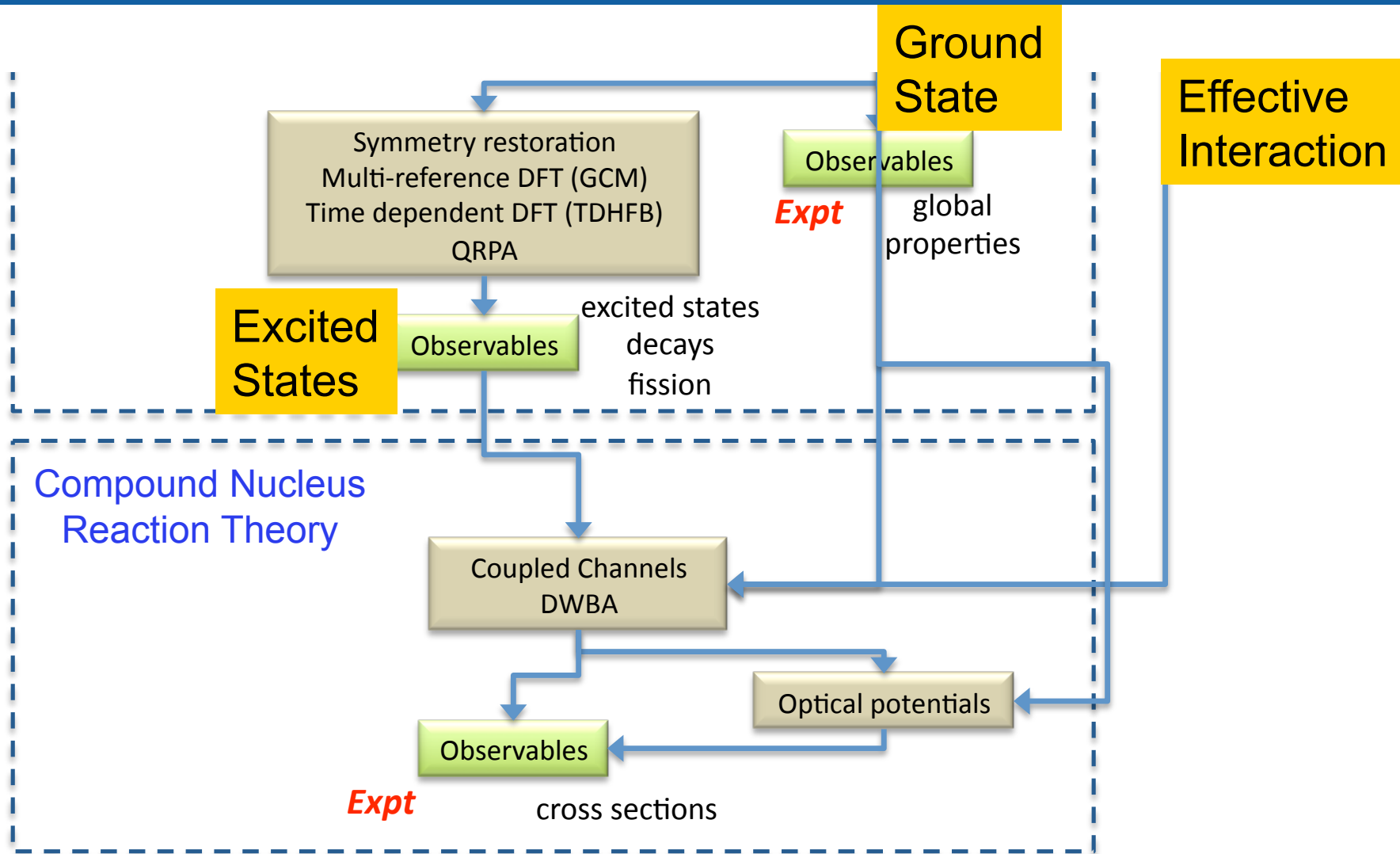


Ian Thompson

Lawrence Livermore National Laboratory, P. O. Box 808, Livermore, CA 94551
This work performed under the auspices of the U.S. Department of Energy by
Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344

LLNL-PRES-488272

Part of the UNEDF Strategy



Planned Year-5-End Deliverables

Light-ion Reactions

- Investigate reactions in light nuclei using NCSM with RGM. Some of:
 - Benchmark n - ^8He , and n - ^9Li scattering.
 - Investigate $^3\text{H}+^4\text{He}$ scattering and capture reactions.
 - Use two-, three-, and four-body transition densities for $A=3,4$ nuclei.
 - Development of three-body transition density calculation for $A>4$.
 - Include NNN interaction for $n+A$ and $p+A$ systems

LLNL nucleon-nucleus calculations:

- Determine deuteron optical potentials, including deuteron breakup
- Folding of density-dependent, spin-orbit and charge-exchange forces
- Effects of Skyrminian effective masses in scattering
- First nucleon-nucleus calculations with deformed QRPA transition densities.
- Test new UNEDF functionals
- Support MSU student on optical-potential L -dependences & non-localities in direct reaction calculations.

Arbanas:

- Examine energy-dependence of eigensolutions in the expansion for the KKM theory

