

Use case application of SU2 software package

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We present a use case of our SU2 software package of SU(2) scalars. The package offers seamless F77-style coding in C++ for the user, but comes with move-semantix and polymorphic implementations of sub-scalars: arithmetic_scalar and cpx<same>, which is essential for a scientific library (such as our NXV4 library). The use case we present is of a driven damped harmonic oscillator, known to require 2 integrals, of which one constitutes the Green function for the problem. However, with SU(2) scalars the differential equation is 1D, is integrated trivially and the Green function is a matrix element of the propagator - as we show. Perhaps this mathematical flare is dismissible as equivalent to other known methods, however from the computational point of view it makes all the difference in the world, both in simplicity of design and especially in numerical precision, as only one integral is needed.

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