

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Displacement formulas for noncommutative operators JEAN-FRANCOIS VAN HUELE, BAILEY HSU, Brigham Young University — The study of the time evolution of quantum systems leads us to the manipulation of exponentials of noncommuting observables. We present analytical expressions for displacements that involve noncommutative operators. We consider successively operators from noncommutative quantum mechanics, radial momentum operators, and spin-dependent displacement operators. The noncommutativity results in the appearance of phase factors and of staggered displacements. To obtain these results we apply Baker-Campbell-Hausdorff-like formulas. The displacement formulas can be used to construct propagators of spin and other noncommuting quantum systems.

Jean-Francois Van Huele
Brigham Young University

Date submitted: 23 Jan 2009

Electronic form version 1.4