

## DOE final report

The project was completed with over 12 papers published in the final contract period in the field of atomic collisions. Also more than 12 contributed talks were given and more than 4 invited talks. The general ideas were related to how time works in quantum systems and how this can be used to control atomic and chemical reactions. Comparison was made of experiment and relation to quantum control and quantum computing was explored. Specifically time correlation was defined and calculations were completed that identified effects due to time correlation. An independent time approximation was developed and the use of multiple times in the N-body problem was examined. This study provided insight as to the dynamics of the many-body problem in atomic, molecular and optical physics.