As computer technology, both hardware and software, continues to advance at a rapid pace, scientists are becoming more and more dependent on it. Could it be that soon there will be no place for fundamental theoretical work because all of the important stuff can be calculated using computers? Hopefully this will not happen, at least for a long time. In this talk a few things about relativity and spin will be discussed from the perspective of relativistic quantum chemistry. Despite the fact that relativity demands a field theoretical description of all quantum processes, relativistic quantum chemistry would go nowhere if it had to deal with the fully quantized theory. Can you imaging calculating molecular properties using a theory in which all forces are mediated by the exchange of gauge bosons (photons)? Yet, to some extent this picture might be unavoidable. A nice example (the focus of the talk) is the Darwin term that arises in relativistic quantum chemistry, and not even at an especially high level of approximation. I will do my best to keep the presentation at a down-to-earth level. In this regard you should not worry. I am an experimentalist so the talk will not be as awful as it sounds.

Monday, October 8, 2012
4:00 P.M.
2033 Young Hall

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