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Katie White* (kwhite01@saintmarys.edu), Department of Chemistry and Physics, Department of Mathematics, Saint Mary's College, Notre Dame, IN 46556, **Megan Boyle** (mboyle01@saintmarys.edu), Department of Chemistry and Physics, Department of Mathematics, Saint Mary's College, Notre Dame, IN 46556, **Toni L O Barstis** (tbarstis@saintmarys.edu), Department of Chemistry and Physics, Saint Mary's College, Notre Dame, IN 46556, **Joanne Snow** (jsnow@saintmarys.edu), Department of Mathematics, Saint Mary's College, Notre Dame, IN 46556, and **Jennifer Herdman**. *Inquiry-based Exercises for Physical Chemistry: Hydrogenic Model*. Preliminary report.

To better serve our students, Profs Joanne Snow and Toni Barstis worked collaboratively to create a series of inquiry-based exercises relative to the hydrogenic model. These exercises draw upon students' understanding of multivariate calculus and probability as it is applied to this model. Each exercise was designed using Maple. As part of an undergraduate research project in pedagogy, students have assisted in the development of these exercises: Jennifer Herdman developed exercises that involved the radial wavefunction, including calculating (via multiple integrals) the average and most probable distance and the probability of locating an electron in a certain region of space, and Megan Boyle and Katie White developed exercises that involved the angular wavefunction, including creating probability contour plots (via integration of probability density functions) that show the shapes of the various hydrogenic wavefunctions (orbitals) and that examine how these shapes are dependent on a series of variables. Megan and Katie have had a unique opportunity to integrate and apply their knowledge of mathematics, physics, and chemistry to this project. For this conference, they will present their research, focusing on the mathematic skills used in this project. (Received September 26, 2006)