

1067-Z1-2298      **Emek Kose Can\*** ([eksecan@lmu.edu](mailto:eksecan@lmu.edu)), 1 LMU Drive UHall 2700, Mathematics Department, Los Angeles, CA 90045. *Imaging Science For Undergraduate Projects Using ODEs and PDEs.*

Imaging science is a rapidly developing area of research in applied mathematics where there are many open problems involving elementary ideas from differential equations, geometry and numerical analysis. Catadioptric sensors are imaging devices that consist of cameras and mirrors. The main problem of catadioptric sensor design is to find a mirror surface so that the system images the world in a certain way. Different applications such as robot vision, surveillance or photography require different levels of mathematical backgrounds. The accessibility of catadioptric sensor design makes it ideal for undergraduate research projects. We discuss two such systems, one in which the goal is numerical solution of a nonlinear ODE. The other provides opportunity for discussing vector fields, integration of vector fields and numerical solution of quasi-linear PDEs. (Received September 22, 2010)