**Juhi Jang**

**Gravitational collapse of gaseous stars**

A classical model of a self-gravitating Newtonian star is given by the gravitational Euler-Poisson system, while a relativistic star is modeled by the Einstein-Euler system. I will review some recent progress on the local and global dynamics of Newtonian star solutions, and discuss mathematical construction of self-similar gravitational collapse of Newtonian stars including Larson-Penston solution for the isothermal stars, Yahil solution for polytropic stars, which show the existence of smooth initial data that lead to finite time collapse, characterized by the blow-up of the star density. If time permits, I will also discuss the relativistic analogue of Larson-Penston solutions and formation of naked singularities for the Einstein-Euler system. The talk is based on joint works with Y. Guo, M. Hadzic, and M. Schrecker