

TUESDAY

DECEMBER 8

12:30 P.M.

RM 184 NSH

A Numerical Framework in the Search for Habitable Exoplanets

Mr. Geoffrey Lentner

Graduate Student, University of Notre Dame

The implications for discovering a planet elsewhere in the galaxy that can sustain life goes without saying. A persisting unanswered question is: just how prevalent are these planets? Just how far away can we expect our nearest neighbor to be? I have flipped the problem on its head and started with possible answers and instead asked, what are the consequences of each of these answers? I have developed new simulation code that offers a numerical framework for exploring the possibilities for the distribution of planets in our galaxy. More generally, this software is capable of generating any system of particles defined by the user. We can provide an arbitrary number of probability density functions in different coordinate systems, both analytic and empirical, up to 3D. The code maps the nearest neighbor separations to one or more axes and allows for the solution to the expected distance given a location of inquiry.