1154-65-983 **Andrew P Miller*** (andrew.miller@uconn.edu) and **Dmitriy Leykekhman**. *The Discrete Green's Function: Positivity in Two Dimensions Versus Three Dimensions using Piecewise Linear Finite Elements.* Preliminary report.

In this talk we will briefly introduce the finite element method using piecewise linear functions for the Laplace problem. We will then recall some basic properties of the continuous Green's function ($G^{x_0}(x)$), introduce the Discrete Green's function ($G_h^{x_0}(x)$), and discuss the differences in the basic properties of the Discrete Green's function. Finally, we briefly discuss the implication of a positive Discrete Green's function and proving a Discrete Harnack Inequality as well as compare the arguments used for proving positivity in two dimensions versus three dimensions and the challenges to the three dimensional case. (Received September 12, 2019)