

1035-60-586

Megan Watson* (meg.watson@mail.utexas.edu), **Eduardo Espinola** (eespinola@miners.utep.edu) and **Paige Shy** (pcshy@unca.edu). *Variations on the Ménage Problem II*. Preliminary report.

In the original ménage problem, women and their husbands are seated in a circle, either alternating or randomly by gender so that a woman is considered "happy" if her husband is seated next to her. Even in this simple situation, the exact distribution of the number of happy women is non-trivial. Moreover, as the scenarios become more complicated, finding approximate distributions becomes more realistic. Thus we present Poisson approximations in all cases. Using this approximation tool, we create increasingly complicated scenarios in which to apply derangement ideas.

First we placed the couples on the vertices of different graphs such as hypercubes, caterpillars, and torii. The women could be seated randomly or in some sort of organized fashion so that we had several different expected values, depending on the type of "dinner party." We then allow for varying degrees of happiness by introducing more family members so that each husband and wife had a corresponding child, dog, etc. With this new definition, a woman is considered "happy" if either her husband or her child is seated next to her, and she is considered "very happy" if both are seated next to her. (Received September 11, 2007)