Abstract Submitted
for the SES09 Meeting of
The American Physical Society

A Survey of Stellar Families: Multiplicity of Solar-type Stars[1]
DEEPAK RAGHAVAN, HAROLD MCALISTER, Georgia State University — We owe a lot to our Sun. The Earth was formed as a by-product of the Sun's birth and life on Earth is sustained by the Sun's energy. But our Sun is just one among billions. So we wonder – is our Sun unique in harboring conditions favorable to life, or is the Universe, like the Earth, teeming with life? Do other Sun-like stars have planets? Do they have other stellar companions? My Ph.D. work was dedicated to answering these questions and in this talk, I will present the results. In the most comprehensive effort yet on this study, I analyzed 454 stars by synthesizing the vast body of knowledge about them and augmenting them with targeted new observations. The resulting statistics show that about 55% of solar-type stars are even more Sun-like, for they are single, reversing prior expectations. Other results, consistent with expectations, show that younger stars are more likely to have companions, as are more massive stars. Stellar binaries seem to disproportionately favor twins, i.e. stars of nearly identical masses. The results also show that planets are as likely to form around single stars as they are around components of binary or multiple star systems, increasing the real estate available for planets, and perhaps life.

[1]This work was supported by The Center for High-Angular Resolution Astronomy and by Georgia State University.

Deepak Raghavan
Georgia State University

Date submitted: 14 Aug 2009 Electronic form version 1.4