



# San Mateo County Astronomical Society



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***SMCAS General Meeting and Presentation on Friday November 3, 2017***

## **Dr. Gibor Basri**

Professor Emeritus of Astronomy, UC Berkeley

## **Are Red Dwarf Planets Habitable?**

Friday, November 3, 2017 , [College of San Mateo, Building 36](#)

SMCAS General meeting at 7:00 p.m. ISC Room, room 110

Presentation at 8:00 p.m. [Planetarium](#)

Free and open to the public, free parking (recommend lots 5 or 6).



Most of the news about exoplanets this past year has revolved around the discovery of “Earth-sized” planets in the “habitable zone” of “red dwarf” stars. This is partly due to the fact that such planets are more easily found, partly because most stars are red dwarfs (cooler and smaller than the Sun), and partly because smaller stars apparently tend to have smaller planets. Further factors in their favor are the fact that red dwarfs are very common and live a very long time in a stable phase, and

apparently smaller planets are more abundant around them. Dr Basri will talk about these discoveries and give a background on red dwarfs.

Most of the talk concentrates on the current thinking about whether a planet around a red dwarf could, in fact, actually harbor earth-like life. This question is still a very active one; 15 years ago most astronomers would have just answered “no”. He’ll explain why, and how our thinking is evolving. Problems with habitable zone red dwarf planets include tidal locking, strong stellar flare activity, and potential removal of large volumes of water by stellar UV emission (especially since the pre-main sequence phase is much longer for red dwarfs, which will keep the eventually temperate planet too hot for hundreds of millions of years). He will suggest potential ways around all these problems. He will also discuss whether the usual concept of “habitable zone” is too restrictive.



Dr Basri earned a BSc in Physics from *Stanford University*, and a PhD in Astrophysics from the *Univ. of Colorado, Boulder*, with a thesis on stellar magnetic activity. An award of a *Chancellor's Postdoctoral Fellowship* then brought him to Berkeley, where he has been ever since. His work in the 1980s concentrated on star formation and the study of T Tauri stars, as well as continuing studies of stellar magnetic activity. In the 1990s became an early pioneer and world expert in the study of brown dwarfs. He served as Acting Chair for the Astronomy Dept. in 2006-07. He became Professor of the Graduate School in 2016 (meaning he is an active Emeritus professor).

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Dr Basri has written over 200 technical publications, including numerous review articles. There are more than 15,000 citations to his works. He has served on committees helping to award major NASA and NSF grants and projects, and awarding time on the (then world's largest) Keck telescopes. He was a Co-investigator on the Kepler mission; tasked to understand the "noise" that stellar variability introduces into the photometric detection of extrasolar planetary transits, and to help extract some of the stellar science that is also possible.

Dr Gibor is involved in science education, and throughout his career has worked on encouraging the participation of minorities in science. His efforts in this were recognized by the *Chancellor's Award for Advancing Institutional Excellence* in 2006. In 2007 he was selected as the founding [Vice Chancellor](#) for Equity and Inclusion at Berkeley. He was awarded the *Berkeley Citation* (the campus' highest honor) in 2015.