

New collaboration to study star-planet magnetic interactions ^[1]

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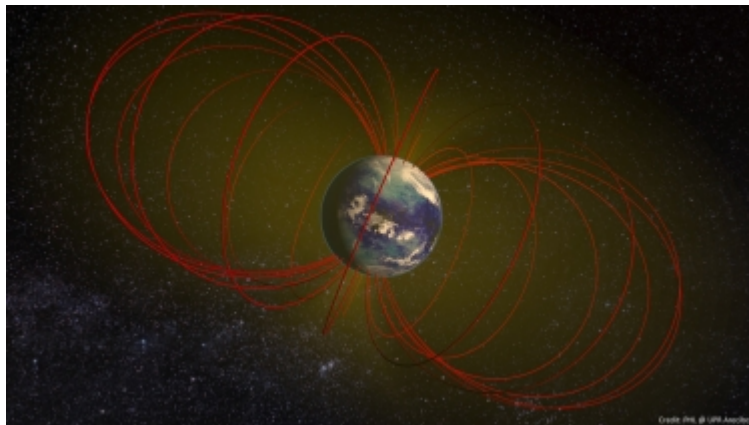
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PHL UPR ^[2]

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By:



Artistic representation of the magnetic field (red lines) around a potentially habitable world (Credit: PHL @ UPR Arecibo).

The Planetary Habitability Laboratory ^[3] of the University of Puerto Rico at Arecibo (PHL @ UPR Arecibo) is starting a new collaboration with Rice University and the Arecibo Observatory to study the magnetic interactions of stars and planets, focusing on potentially habitable worlds.

There are up to thirty potentially habitable worlds ^[4] out of the nearly two thousand known confirmed planets around other stars (exoplanets). We understand that these worlds might have the right size and distance from their star to sustain surface liquid water, but little else is known.

Exoplanets similar to Earth could end up dry and unsuitable for life depending on how they evolve with their star. Therefore, it is necessary to understand the long-term interactions between planets and their star to recognize and characterize habitable worlds.

The Sun produces the energy to maintain a temperate environment and sustain life on Earth. It also emits harmful energy that could strip our atmosphere or damage life at a cellular level, but Earth's magnetic field gives us some protection from the damaging effects of the Sun.

Scientists keep monitoring and understanding how our Sun and Earth interact, maintaining a global habitable environment. However, many stars are much more active than the Sun or suitable planets might lack the protection of a magnetic field, thus limiting their potential for life.

The study as part of this collaboration will model star and planet magnetic interactions using the Sun's interactions with the Earth, Saturn and Jupiter as calibration points. Such models might help not only to better understand the diversity of habitable worlds out there but also to create new strategies for their search and detection.

The PHL will contribute with its expertise on habitable exoplanets, the creation of educational visualizations, and a summer astronomy academy. The academy will be held at the Integrated Science Multi-use Laboratory (ISMuL) of the UPR Arecibo, and the Arecibo Observatory.

This five-years collaboration, *Modeling the Magnetic Interactions between Stars and Planets*, is led by members of the Laboratory for Space and Astrophysical Plasmas [5] from the Rice Space Institute [6] and funded by a NSF INSPIRE grant.

This press release was published here: <http://phl.upr.edu/press-releases/alienworldsaroundalienstars> [2]

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