Astrophysics Seminar

Monday, February 6, 2017

Stellar Activity Evolution: Impact on Exoplanets and CV Evolution

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Stellar activity is known to be controlled by rotation. Observations of young open clusters have revealed a bimodal distribution of the rotation periods of solar-like stars that has proven difficult to explain under the existing rubric of magnetic braking. We have found that magnetic complexity can play an important role in controlling stellar spin-down rates, and provides a natural physical basis for stellar rotation evolution models requiring a rapid transition between weak and strong spin-down modes. Relevant applications include the spin down of young stars and the orbital evolution of cataclysmic variables. The secular evolution of magnetic activity is also key to understanding the space weather of exoplanets. In this talk I will discuss how X-ray activity scales with rotation and, therefore, with age, its effects on exoplanetary environments with special reference to the situation of Proxima b, and how this new spin-down prescription can provide a natural explanation for problems such as the CV period gap.

3:30pm in CAS 502. *Refreshments served at 3:15pm in CAS 500.*

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Next Week
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1 Silber Way, 9th Floor