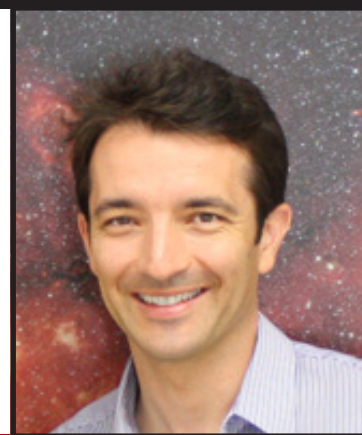


Sebastian Heinz

University of Wisconsin-Madison



Circinus X-1 — A Puzzle Solved

Department of Physics Colloquium

Neutron stars are nature's strongest magnets. At birth their fields are thought to exceed 10^8 Tesla and can reach up to 10^{11} Tesla. Over time, these strong fields are believed to decay, but this process is expected to take millions of years. When a neutron star is born in a supernova explosion, it may stay bound to a stellar companion it was in orbit with before. In such a case, the companion can transfer mass to the neutron star and make it shine - we call this an X-ray binary. The nature of the accretion transport of matter can tell us a lot about the properties of a neutron star. For example, we can use X-ray binaries to probe whether the simple picture of young strong magnetized and old weakly magnetized neutron stars holds in nature. I will present results from an ongoing study of the neutron star X-ray binary Circinus X-1 that solve a number of outstanding puzzles about this source and show that even young neutron stars can be weakly magnetized.

