Searching for AR Sco 2.0: are other white dwarf pulsars out there?

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The evolution of accreting white dwarfs is driven by competing mechanisms transferring angular momentum between the binary system's orbit and the white dwarf's rotation. These systems can constrain the physics of binary interactions, which is of crucial importance for understanding phenomena such as thermonuclear supernovae and gravitational wave emission by compact binaries. Of particular interest are accreting magnetic white dwarfs, in which the spin period is revealed through photometric variations induced by spots. The origin of these systems is not fully understood — how can these white dwarfs have strong magnetic fields and, at the same time, have accreted enough material to often achieve high spin rates? One of the most remarkable examples identified to date is AR Sco. AR Sco is composed of a low-mass red dwarf star and a rapidly spinning, magnetised white dwarf on a 3.56-hour orbit. It shows strongly pulsed emission over a broad range of wavelengths, from radio to X-rays, with a period of 1.97 minutes, which lead to it being known as a "white dwarf pulsar". Despite its plethora of fascinating properties, AR Sco has remained the only system of its kind even six years after its discovery, preventing us from testing predictions of proposed models. We have performed a systematic search for AR Sco-like objects, relying on *Gaia* astrometry and photometry, and on variability in photometric surveys such as TESS and WISE, to identify objects sharing properties with AR Sco. In this talk, we report the results of this search, including the discovery of a new white dwarf pulsar.