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Sco X-1 in LIGO: directed searches for continuous gravitational waves from neutron stars in binary systems GRANT MEADORS, University of Michigan, EVAN GOETZ, Albert Einstein Institute, Hannover, KEITH RILES, University of Michigan — Scorpius X-1 and similar low-mass X-ray binary (LMXB) systems with neutron stars contain favorable conditions for the emission of continuous gravitational waves (GW). Companion star accretion is believed to recycle the neutron star, spinning it up to high rotational speeds. That accretion could also induce non-axisymmetries in the neutron star, leading to detectable GW emission. Advanced LIGO and other 2nd-generation interferometric observatories will permit searches for such gravitational waves using new algorithms, including the TwoSpect program, which was developed originally for all-sky binary searches. In this presentation we discuss an implementation of TwoSpect using fine templates in parameter space at the initial stage and optimized to search for LMXBs, such as Sco X-1, where some of the orbital parameters are known. Results from simulations will be shown.

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