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**UNIVERSITÉ  
DE GENÈVE**

FACULTÉ DES SCIENCES  
Département d'astronomie

## ASTROPHYSICS SEMINAR



Friday, 23 February 2007 at 11:00

# 4U 1820-303: a physical laboratory in the sky

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**Abstract.** 4U 1820-303 is an X-ray binary with a very short 11-min orbital period. It consists of a white dwarf and a neutron star, which lose the angular momentum by emission of gravitational waves, which then leads to mass transfer from the white dwarf onto the neutron star. The flux of the resulting X-ray emission is modulated at both the orbital period and a long, 170-d, period. We explain the 170-d period via the Kozai mechanism, which is a quasiperiodic tidal effect due to the presence of a 3rd star in the system. We calculate the resulting periodic variability of the inner eccentricity and the mass transfer rate. We have also discovered a strong dependence of the orbital modulation on the X-ray spectral state.

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### Additional Information

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The seminars are given in the ISDC "Pavillon" building  
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