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## PLASMAS E ALTAS ENERGIAS

## SIMULTANEOUS RADIO/X-RAY OBSERVATIONS OF SCO X-1

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We present simultaneous radio/X-ray observations of Sco X-1, the brightest persistent LMXB in the soft X-ray band and also the brightest radio source among neutron stars LMXBs. From recent VLBI observations of Sco X-1 a variable core and two (also variable) radio lobes (jets) were discovered, with lobes moving with an average speed of 0.45 c. Hard X-ray studies of Sco X-1 were presented before based on HEXTE/RXTE data, showing a variable hard X-ray tail without any correlation with mass accretion rates states. Our results are derived from observations carried out in 1999 by RXTE (soft to hard X-rays), VLA, APT and EVN (radio) and represent a unique chance for any correlation studies between the radio/X-ray emission in LMXB harbored by neutron stars. We found that the source was not observed often in the flaring branch (FB) part of the Xray color diagram (CD), as expected from models predicting that during radio loud states the accretion rate should be not so large. We observed a hard X-ray tail (HXT) only once (UT date 12.00 to 12.11) after a peak in the radio emission of the core (UT date 11.70). This was the only HXT observed after a peak in the radio emission, suggesting that there's no correlation between the production of hard X-rays and jet emission in Sco X-1, as opposed to X-ray binaries containing black holes. This HXT detection follows the idea proposed by D'Amico et al. (ApJ 547, L147, 2001; Adv. Spa. Res. 28, 389, 2001) that the hard X-ray spectrum is as flat as the mass accretion rate increases. It also fits the idea, by the same authors, that the production of HXT in Z sources is a process triggered when the thermal brightness of the source is above a certain threshold value. Since the HXT production is not correlated with accretion rate these observations may be indicating that the production of hard X-ray tails in Sco can occur very near or at the neutron star surface. In conclusion, we can see from our results that the models used to explain the hard X-ray production from the radio jet emission in X-ray binaries containing black holes can not be used in the case of Sco X-1.