has an increasing density (and pressure) gradient, we find that it tends to compress the cocoon of shocked material that surrounds the beam and destroy the bow shock-like structure at the head. The compressing ambient medium collimates the jet and induces the development of Kelvin-Helmholtz instabilities which cause beam focusing and wiggling, and the formation of internal traveling shocks via pinching along the beam (Gouveia Dal Pino et al. 1996). In ambient regions of decreasing density (and pressure), the flow widens and relaxes becoming very faint. This could explain observed "invisible" jet sections like the gap between the parent source and the collimated beam, and the gap between the latter and the distant bow shock as is seen in systems like Haro 6-5B.

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THE ORIGIN OF INTERNAL KNOTS IN ASTROPHYSICAL JETS REVISED IN THE LIGHT OF 3-D NUMERICAL SIMULATIONS

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The precise nature of the mechanism that produces the internal knots observed in protostellar and extragalactic jets is still controversial. Among the proposed mechanisms to excite them one finds: 1) stationary oblique crossing shocks which may be produced in a De Laval nozzle scheme (e.g., Raga et al. 1990); 2) Kelvin-Helmholtz instabilities at the boundary between the jet and the surrounding medium (e.g., Gouveia Dal Pino & Benz 1993, Gouveia Dal Pino, Birkinshaw & Benz 1996); 3) thermal instabilities (e.g., Gouveia Dal Pino & Opher 1990); 4) shocks produced by time variations in the ejection mechanism that produces the jet (e.g., Gouveia Dal Pino & Benz 1994); and 5) entrainment of ambient material in the jet (e.g., Chernin et al. 1994). In this work, all these potential mechanisms are revised and discussed under the light of 3-D numerical simulations and observations.

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ROSAT OBSERVATIONS OF THE CMa R1 MOLECULAR CLOUD

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We have used X-rays as tracers of low mass star formation in moderately distant molecular clouds, for which the traditional surveys have not enough sensibility to detect faint sources. In the present work we show the results obtained from the *ROSAT* PSPC 0.1 – 2.4 keV image of the CMa R1 field, centered on a dense region at α:07^h 01^m δ:−11^o 24'(J2000). Following an analysis previously made for the nearby clouds Cha I (Feigelson et al. 1993 ApJ 416, 623) and ρ Oph (Casanova et al. 1995 ApJ 439, 752), we searched for optical and infrared counterparts in order to obtain stellar identifications, and we used various criteria to establish the nature of the detected objects. By considering as reliable sources those having S/N > 3.4, we found 45 X-sources in the CMa field. In the outer parts of the image the detected sources are shown as extended features, which could be unresolved faint sources or diffuse emission. The X-ray luminosity (L_X) was derived for the sources and their values are generally comprised between $\sim 10^{30}$ and 10^{32} erg s^{-1}. We used *MAMA* microdensitometer at Observatoire de Paris that provided us the digitization of the POSS(R) plate which contains the CMa field. The estimated m_R are compared to L_X in order to evaluate the correlation between bolometric and X-ray luminosities. For the nearby clouds Cha I (Feigelson et al.), ρ Oph (Casanova et al.), and Taurus (Neuhäuser et al. 1995, A&A 297, 391) the correlation $L_X/L_{bol} = 10^{-4}$ is found. A good correlation between m_R and L_X was confirmed for the optical counterparts of CMa R1 X-ray sources. We also obtained a ^{12}CO map with the 2.5-m POM-IRAM dish at Plateau de Bure (France). The *ROSAT* image shows a region of extended X-ray emission coincident with the CO peak, and with a reflection nebula which indicates a region of star

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