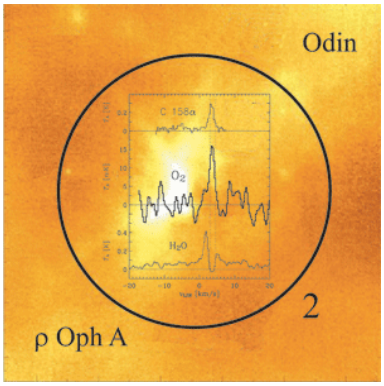
Astronomy & Astrophysics

HIGHLIGHTS: this week in A&A

Volume 466-3 (May II 2007)



First detection of molecular oxygen in the interstellar medium

"Molecular oxygen in the ρ Ophiuchi cloud" by B. Larsson et al.
A&A 466, p. 999

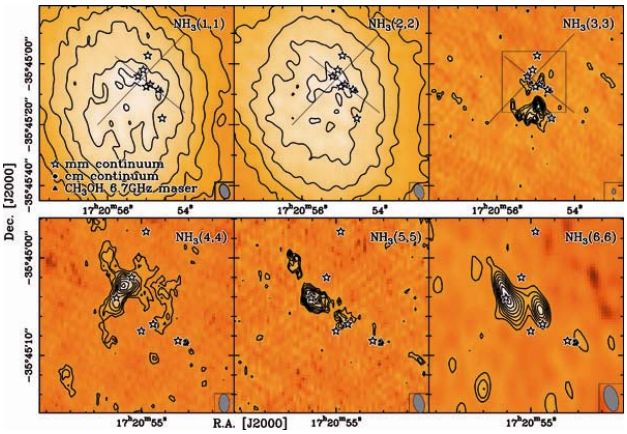
This paper reports the first ever detection of molecular oxygen in the interstellar medium. For a long time, molecular oxygen was expected to be abundant in the interstellar medium, but many attempts failed to detect it. O_2 emission has now been detected in the ρ Ophiuchi cloud as observed with the ODIN satellite.

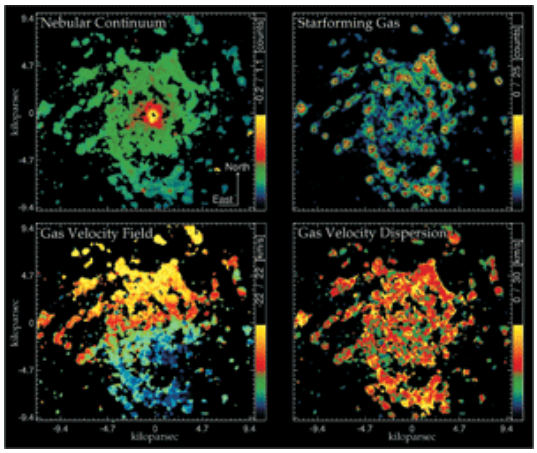
A press release of this result was issued by the Swedish Space Corporation.

Hot ammonia in the massive star-forming region NGC 6334 I(N)

"Hot ammonia in NGC 6334 I and I(N)" by H. Beuther et al.
A&A 466, p. 989

In the zoo of massive protostars, NGC 6334 I(N) occupies an enigmatic place, because it has a cold spectral energy distribution. This paper presents its detection in ammonia lines, which trace hot gas, hence showing it has a hot core but a cold exterior. Thus, below the surface, the differences between it and others may be less than once thought.





Hα kinematics of the galaxy NGC 628

"Evolution of structure in late-type spiral galaxies. I. Ionized gas kinematics in NGC 628" by K. Fathi et al. A&A 466, p. 905

This detailed study of the Hα kinematics of the face-on galaxy NGC 628 reveals a nuclear ring and a fast-rotating nuclear disk. The kinematical study concludes that the gas flowing inward explains both the formation of the resonant ring and build-up of the inner bulge through secular evolution.

In section 5. Galactic structure, stellar clusters, and populations

"Brown dwarf formation by binary disruption" by S.P. Goodwin and A. Whitworth. A&A 466, p. 943

The authors propose that brown dwarfs begin as wide companions of low-mass stars due to fragmentation of the outer parts of large protostellar disks, which are then gently ejected due to passage of nearby stars in a cluster. They show that this mechanism can avoid several problems inherent in previous brown dwarf formation scenarios.

In section 12. Atomic, molecular, and nuclear data

"The UMIST database for astrochemistry 2005" by J. Woodall et al. A&A 466, p. 1197

Molecular abundances play a vital role in our understanding of phenomena as diverse as cometary atmospheres and the starbursts around AGNs. Modern models of such processes require knowledge of the reaction rates that determine these abundances. This article represents the latest update of one of the two leading databases used for this purpose. It contains 4573 reactions among 420 species.