NASA ADS Astronomy/Planetary Abstract Service

- **Find Similar Abstracts** (**with default settings below**)
- **Citations to the Article (1)**
- **SIMBAD Objects**
.
- **Translate Abstract**

Title:	CO Kinematics, Star Formation and Dynamical Evolution of the Starburst NGC 4102
Authors:	Jogee, S.; Kenney, J. D. P.
Affiliation:	AA(Yale), AB(Yale)
Journal:	American Astronomical Society, 187th AAS Meeting, #49.06; Bulletin of the American Astronomical Society, Vol. 27, p.1356
Publication Date:	12/1995
Origin:	AAS
Abstract Copyright:	(c) 1995: American Astronomical Society
Bibliographic Code:	1995AAS...187.4906J

Abstract

Gas driven towards the center of a spiral galaxy often settles into a compact molecular disk spanning the circumnuclear (inner kiloparsec) region. A central starburst, when triggerred in this disk, can build a compact stellar disk which not only outshines the spheroidal bulge in some galaxies, but may add young metal-rich stars to an old bulge population through vertical scattering of stars (e.g Sellwood 1994). To develop an insight into such galactic evolution, we need to understand the dynamical conditions which affect the CO morphology and the star formation laws which control the onset and evolution of any central starburst. We use high resolution CO observations from OVRO, radio continuum, R-band and Hα images to study the circumnuclear region of NGC 4102, a LINER/HII SABb spiral which qualifies as one of the most luminous nearby starbursts (Devereux 1989). We correct for beam smearing to derive the intrinsic properties of the molecular gas. The CO lies in a compact disk whose position angle and inclination coincides with that of the outer stellar disk. The velocity field in the central 200 pc is consistent with being purely circular, but at larger radii (3'') the spatial velocity-plot shows a sharp discontinuity in the kinematics. The star formation rate (SFR) per unit gas mass remains high in the central 150 pc where the motions of the gas are mostly circular, but drops sharply where the discontinuity in gas kinematics occurs. In the region of star formation which is definitely inside the outer inner Lindblad resonance (OILR), the Toomre Q parameter is close to 1 showing that star formation might be aptly described by the gravitational instability picture. The compact CO morphology of NGC 4102 and the short outflow timescale of 10(6) years of its central starburst wind suggest this galaxy is at an earlier evolutionary phase than M82 and NGC 253 whose outflow timescales are significantly larger. The large central gas mass fraction and high SFR suggest the central starburst in NGC 4102 will build a massive young compact stellar disk in the central 500 pc in much less than a Hubble time .

Bibtex entry for this abstract **Preferred format for this abstract** (see Preferences)

Find Similar Abstracts:

Use: ☐ Authors ☑ Title ☑ Abstract Text

Return: ◉ Query Results ○ Query Form Return 100 items starting with number 1

Database: ☑ Astronomy/Planetary ☐ Instrumentation ☐ Physics/Geophysics ☐ ArXiv Preprints

Send Query Reset

NASA ADS Homepage | ADS Sitemap | Query Form | Preferences | HELP | FAQ