

RICCARDO CESARONI AND STAR FORMATION

PRE-HISTORY AND EARLY STAGES
(I retired in 2007!)

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HOW IT ALL BEGAN

1966: Arcetri is a Solar Observatory (Riccardo aged 6 y)

1968: IAU Summer School in Manchester. One year post-doc at NRAO. 300 foot survey of galactic HII regions at 21 cm with E. Churchwell.

1969 – 1980: Beginning of the use of radio interferometers in studies of galactic HII regions. Beginning of use of the Medicina 32 m radiotelescope for H₂O masers observation (G.TOFANI and myself, G. COMORETTO for autocorrelator 1 and 2). Formation of the Arcetri "star formation group".

1980: Riccardo arrives at Arcetri, thesis with Pacini in 1984 and PhD with G.TOFANI and me.

1989 – 1991: Riccardo goes to MPI fuer Radioastronomy in Bonn to work with E. Churchwell and M. Walmsley.

1991: research astronomer at Arcetri.

1998: associate astronomer at Arcetri.

Up to today 205 publications on refereed journals.
I will cover only the 80's up to 2007.















Publicazioni con referee

1. Felli M., Hjellming R. M., Cesaroni R. 1987, "S 201 : an HII region produced by an ionization front eroding a molecular cloud", *Astronomy and Astrophysics*, 182, 313
2. Cesaroni R., Palagi F., Felli M., Catarzi M., Comoretto G., Di Franco S., Giovanardi C., Palla F. 1988, "A catalogue of H₂O maser sources north of $\delta = -30^\circ$ ", *Astronomy and Astrophysics Supplement Series*, 76, 445
3. Churchwell E., Walmsley C. M., Cesaroni R. 1990, "A survey of ammonia and water vapor emission ultracompact HII regions", *Astronomy and Astrophysics Supplement Series*, 83, 119
4. Cesaroni R. 1990, "Water maser variability and disk structure in S 255", *Astronomy and Astrophysics*, 233, 513
5. Comoretto G., Palagi F., Cesaroni R., Felli M., Bettarini A., Catarzi M., Curioni G. P., Curioni P., Di Franco S., Giovanardi C., Massi M., Palla F., Panella D., Rossi E., Speroni N., Tofani G. 1990, "The Arcetri atlas of H₂O maser sources", *Astronomy and Astrophysics Supplement Series*, 84, 179
6. Cesaroni R., Walmsley C. M. 1991, "OH maser models revisited", *Astronomy and Astrophysics*, 241, 537
7. Palla F., Brand J., Cesaroni R., Comoretto G., Felli M. 1991, "Water masers associated with dense molecular clouds and ultracompact HII regions", *Astronomy and Astrophysics*, 246, 249
8. Cesaroni R., Walmsley C. M., Koempe C., Churchwell E. 1991, "Molecular clumps associated with ultra compact HII regions", *Astronomy and Astrophysics*, 252, 278
9. Cesaroni R., Walmsley C. M., Churchwell E. 1992, "Hot ammonia toward ultracompact HII regions", *Astronomy and Astrophysics*, 256, 618

Publicazioni con referee

7 out of the first 15, on Medicina water maser survey

1. Felli M., Hjellming R. M., Cesaroni R. 1987, "S 201 : an HII region produced by an ionization front eroding a molecular cloud", *Astronomy and Astrophysics*, 182, 313
2. Cesaroni R., Palagi F., Felli M., Catarzi M., Comoretto G., Di Franco S., Giovanardi C., Palla F. 1988, "A catalogue of H₂O maser sources north of $\delta = -30^\circ$ ", *Astronomy and Astrophysics Supplement Series*, 76, 445
3. Churchwell E., Walmsley C. M., Cesaroni R. 1990, "A survey of ammonia and water vapor emission ultracompact HII regions", *Astronomy and Astrophysics Supplement Series*, 83, 119
4. Cesaroni R. 1990, "Water maser variability and disk structure in S 255", *Astronomy and Astrophysics*, 233, 513
5. Comoretto G., Palagi F., Cesaroni R., Felli M., Bettarini A., Catarzi M., Curioni G. P., Curioni P., Di Franco S., Giovanardi C., Massi M., Palla F., Panella D., Rossi E., Speroni N., Tofani G. 1990, "The Arcetri atlas of H₂O maser sources", *Astronomy and Astrophysics Supplement Series*, 84, 179
6. Cesaroni R., Walmsley C. M. 1991, "OH maser models revisited", *Astronomy and Astrophysics*, 241, 537
7. Palla F., Brand J., Cesaroni R., Comoretto G., Felli M. 1991, "Water masers associated with dense molecular clouds and ultracompact HII regions", *Astronomy and Astrophysics*, 246, 249
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9. Cesaroni R., Walmsley C. M., Churchwell E. 1992, "Hot ammonia toward ultracompact HII regions", *Astronomy and Astrophysics*, 256, 618

regions", *Astronomy and Astrophysics*, 256, 618

10. Henning T., Cesaroni R., Walmsley M., Pfau W. 1992, "Maser search towards young stellar objects", *Astronomy and Astrophysics Supplement Series*, 93, 525
11. Olmi L., Cesaroni R., Walmsley C. M. 1993, "Ammonia and methyl cyanide in hot cores", *Astronomy and Astrophysics*, 276, 489

12. Palagi F., Cesaroni R., Comoretto G., Felli M., Natale V. 1993, "Classification and statistical properties of galactic H₂O masers", *Astronomy and Astrophysics Supplement Series*, 101, 153

13. Palla F., Cesaroni R., Brand J., Caselli P., Comoretto G., Felli M. 1993, "H₂O masers associated with dense molecular clouds and ultracompact HII regions. II. The extended sample", *Astronomy and Astrophysics*, 280, 599

14. Cesaroni R., Wilson T. L. 1994, "An ammonia study of the Orion streamer", *Astronomy and Astrophysics*, 281, 209

15. Brand J., Cesaroni R., Caselli P., Catarzi M., Codella C., Comoretto G., Curioni G. P., Curioni P., Di Franco S., Felli M., Giovanardi C., Olmi L., Palagi F., Palla F., Panella D., Pareschi G., Rossi E., Speroni N., Tofani G. 1994, "The Arcetri catalogue of H₂O maser sources update", *Astronomy and Astrophysics Supplement Series*, 103, 541

16. Hofner P., Kurtz S., Churchwell E., Walmsley C. M., Cesaroni R. 1994, "High-Resolution Observations of a New Ammonia Maser Line in G9.62+0.19", *The Astrophysical Journal*, 429, L85

..... and five "Bonn" publications

2. Cesaroni R., Palagi F., Felli M., Catarzi M., Comoretto G., Di Franco S., Giovanardi C., Palla F. 1988, "A catalogue of H₂O maser sources north of $\delta = -30^\circ$ ", *Astronomy and Astrophysics Supplement Series*, 76, 445
3. Churchwell E., Walmsley C. M., Cesaroni R. 1990, "A survey of ammonia and water vapor emission ultracompact HII regions", *Astronomy and Astrophysics Supplement Series*, 83, 119
4. Cesaroni R. 1990, "Water maser variability and disk structure in S 255", *Astronomy and Astrophysics*, 233, 513
5. Comoretto G., Palagi F., Cesaroni R., Felli M., Bettarini A., Catarzi M., Curioni G. P., Curioni P., Di Franco S., Giovanardi C., Massi M., Palla F., Panella D., Rossi E., Speroni N., Tofani G. 1990, "The Arcetri atlas of H₂O maser sources", *Astronomy and Astrophysics Supplement Series*, 84, 179
6. Cesaroni R., Walmsley C. M. 1991, "OH maser models revisited", *Astronomy and Astrophysics*, 241, 537
7. Palla F., Brand J., Cesaroni R., Comoretto G., Felli M. 1991, "Water masers associated with dense molecular clouds and ultracompact HII regions", *Astronomy and Astrophysics*, 246, 249
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9. Cesaroni R., Walmsley C. M., Churchwell E. 1992, "Hot ammonia toward ultracompact HII regions", *Astronomy and Astrophysics*, 256, 618
10. Henning T., Cesaroni R., Walmsley M., Pfau W. 1992, "Maser search towards young stellar objects", *Astronomy and Astrophysics Supplement Series*, 93, 525
11. Olmi L., Cesaroni R., Walmsley C. M. 1993. "Ammonia and methyl cyanide in hot cores".

From 1997, the “IRAS 20126+4104” saga starts.

26. Cesaroni R., Felli M., Testi L., Walmsley C. M., Olmi L. 1997, “The disk-outflow system around the high-mass (proto)star IRAS 20126+4104”, *Astronomy and Astrophysics*, 325, 725
27. Olmi L., Felli M., Cesaroni R. 1997, “IRAS 12553-7651 in Chamaeleon II: a low mass PMS star with a C¹⁸O outflow?”, *Astronomy and Astrophysics*, 326, 373
28. Cesaroni R., Hofner P., Walmsley C. M., Churchwell E. 1998, “Sub-arcsecond structure of hot cores in the NH₃ (4,4) line”, *Astronomy and Astrophysics*, 331, 709
29. Molinari S., Brand J., Cesaroni R., Palla F., Palumbo G. G. C. 1998, “A search for precursors of ultracompact H II regions in a sample of luminous IRAS sources. II. VLA observations”, *Astronomy and Astrophysics*, 336, 339
30. Molinari S., Testi L., Brand J., Cesaroni R., Palla F. 1998, “IRAS 23385+6053: A Prototype Massive Class 0 Object”, *The Astrophysical Journal*, 505, L39
31. Cesaroni R., Felli M., Walmsley C. M. 1999, “High density molecular clumps around proto-stellar candidates”, *Astronomy and Astrophysics Supplement Series*, 136, 333
32. Hofner P., Peterson S., Cesaroni R. 1999, “Ammonia Absorption toward the Ultracompact H II Regions G45.12+0.13 and G45.47+0.05”, *The Astrophysical Journal*, 514, 899
33. Cesaroni R., Felli M., Jenness T., Neri R., Olmi L., Robberto M., Testi L., Walmsley C. M. 1999, “Unveiling the disk-jet system in the massive (proto)star IRAS 20126+4104”, *Astronomy and Astrophysics*, 345, 949
34. Hofner P., Cesaroni R., Rodríguez L. F., Martí J. 1999, “A double system of ionized jets in IRAS 20126+4104”, *Astronomy and Astrophysics*, 345, L43
35. Olmi L., Cesaroni R. 1999, “High resolution CO and C³⁴O observations of the protostar IRAS 20126+4104”, *Astronomy and Astrophysics*, 345, L47

39. Moscadelli L., Cesaroni R., Rioja M. J. 2000, "Tracing the root of the bipolar jet in IRAS 20126+4104: VLBA observations of H₂O masers", *Astronomy and Astrophysics*, 360, 663
59. Fontani F., Beltrán M. T., Brand J., Cesaroni R., Testi L., Molinari S., Walmsley C. M. 2005, "Search for massive protostellar candidates in the southern hemisphere. I. Association with dense gas", *Astronomy and Astrophysics*, 432, 921
60. Cesaroni R., Neri R., Olmi L., Testi L., Walmsley C. M., Hofner P. 2005, "A study of the Keplerian accretion disk and precessing outflow in the massive protostar IRAS 20126+4104", *Astronomy and Astrophysics*, 434, 1039
61. Furuya R. S., Cesaroni R., Takahashi S., Momose M., Testi L., Shinnaga H., Codella C. 2005, "Relative Evolutionary Timescale of Hot Molecular Cores with Respect to Ultracompact H II Regions", *The Astrophysical Journal*, 624, 827
62. Beltrán M. T., Cesaroni R., Neri R., Codella C., Furuya R. S., Testi L., Olmi L. 2005, "A detailed study of the rotating toroids in G31.41+0.31 and G24.78+0.08", *Astronomy and Astrophysics*, 435, 901
63. Zhang Q., Hunter T. R., Brand J., Sridharan T. K., Cesaroni R., Molinari S., Wang J., Kramer M. 2005, "Search for CO Outflows toward a Sample of 69 High-Mass Protostellar Candidates. II. Outflow Properties", *The Astrophysical Journal*, 625, 864
64. Moscadelli L., Cesaroni R., Rioja M. J. 2005, "Water masers in the massive protostar IRAS 20126+4104: ejection and deceleration", *Astronomy and Astrophysics*, 438, 889
65. Valdetaro R., Palla F., Brand J., Cesaroni R. 2005, "H₂O maser emission from bright rimmed clouds in the northern hemisphere", *Astronomy and Astrophysics*, 443, 535