

K. Wada  
F. Combes  
*Editors*

# Mapping the Galaxy and Nearby Galaxies

**EXTRA**  
MATERIALS  
[extras.springer.com](http://extras.springer.com)

 Springer

comprehensive discussion on what has been learned so far, what are the major outstanding problems, and how we can physically tackle them. We were impressed by recent progress in numerical modeling of galaxies, which will be an essential tool in understanding and testing physical interpretations of “mapping observations” at high resolution.

We wish to express our thanks to the members of the scientific organizing committee for their valuable advice. On behalf of the SOC, we would like to thank Mareki Honma and his team for their collaborative and assiduous effort for almost two years to organize this successful symposium. We are also grateful to Ishigaki City and NPO Yaeyama Hoshino-kai (Star Watching Club) for their warm hospitality and help in various aspects not only during the conference but also in the phases of preparation. We also thank the 4D2U project (Eiichiro Kokubo, Takaaki Takeda, and Sorahiko Nukatani) for their impressive demonstration in VERA observatory. We should also thank Shioko Izumi, Toshiko Tachibana, Tomoka Tosakaki, Haruhiko Takahashi, Takeshi Hashiguchi, and Mayumi Handa for the help they provided to the LOC.

The symposium was financially supported by the Foundation for Promotion of Astronomy, the National Astronomical Observatory of Japan, NEC Corporation, Mitsubishi Electric Corporation, Okinawa Prefecture, the Inoue Foundation for Science, the Japanese Society for the Promotion of Science, Japan Communication Equipment Corporation, and Oshima Prototype Engineering Corporation.

Keiichi Wada (*National Astronomical Observatory of Japan*)  
and Françoise Combes (*Observatoire de Paris*)





Prof. Yoshiaki Sofue, Hiromi Sofue, and Françoise Combes



Yoshiaki Sofue, Mareki Honma, Masaki Morimoto, Naomasa Nakai, Keiichi Wada, Nick Scoville, Nagateru Ohama (City Mayor), Françoise Combes, Reinhard Genzel

## The Organizing Committee

### Scientific

Keiichi **Wada** (NAOJ, Chair)  
Nobuo **Arimoto** (NAOJ)  
Françoise **Combes** (Paris observatory, France)  
Reinhard **Genzel** (MPE, Germany)  
Naomasa **Nakai** (Tsukuba, Japan)  
Nick **Scoville** (Caltech, USA)  
Masato **Tsuboi** (Nobeyama, NAOJ, Japan)

### Local

Mareki **Honma** (NAOJ, Chair)  
Fumi **Egusa** (University of Tokyo)  
Toshihiro **Handa** (University of Tokyo)  
Jin **Koda** (Caltech)  
Kotaro **Kohno** (University of Tokyo)  
Shinya **Komugi** (University of Tokyo)  
Hiroyuki **Nakanishi** (Nobeyama, NAOJ, Japan)  
Takayuki **Saitoh** (NAOJ)  
Sachiko **Onodera** (University of Tokyo)

NAOJ: National Astronomical Observatory of Japan



Reinhard Genzel gives a speech for a warm welcome by Ishigaki-City at the airport.

**Veilleux**, Sylvain, University of Maryland, [veilleux@astro.umd.edu](mailto:veilleux@astro.umd.edu)

**Vlahakis**, Catherine, Argelander Institut for Astronomy,

Bonn University, [vlahakis@astro.uni-bonn.de](mailto:vlahakis@astro.uni-bonn.de)

**Vollmer**, Bernd, Observatoire astronomique de Strasbourg,

[bvollmer@astro.u-strasbg.fr](mailto:bvollmer@astro.u-strasbg.fr)

**Wada**, Keiichi, NAOJ, [wada.keiichi@nao.ac.jp](mailto:wada.keiichi@nao.ac.jp)

**Walter**, Fabian, Max Planck Institute for Astronomy, Heidelberg, [walter@mpia.de](mailto:walter@mpia.de)

**Watabe**, Yasuyuki, Center for Computational Sciences,

University of Tsukuba, [watabe@ccs.tsukuba.ac.jp](mailto:watabe@ccs.tsukuba.ac.jp)

**Wielebinski**, Richard, Max-Planck-Institute for radio astronomy, Bonn,

[rwielebinski@mpifr-bonn.mpg.de](mailto:rwielebinski@mpifr-bonn.mpg.de)

**Wong**, Tony, CSIRO ATNF & UNSW, [Tony.Wong@csiro.au](mailto:Tony.Wong@csiro.au)

**Yamauchi**, Aya, Institute of Physics, University of Tsukuba,

[yamauchi@physics.px.tsukuba.ac.jp](mailto:yamauchi@physics.px.tsukuba.ac.jp)

**Yen**, Chien-Chang, Department of Mathematics,

Fu Jen Catholic University, Taipei, [yen@asiaa.sinica.edu.tw](mailto:yen@asiaa.sinica.edu.tw)

**Yoshida**, Naoki, Nagoya University, [nyoshida@phys.nagoya-u.ac.jp](mailto:nyoshida@phys.nagoya-u.ac.jp)



VERA and “Seaser”







Something new in another “universe”?



Masashi Chiba and dancing astronomers!



Mareki Honma, LOC chair



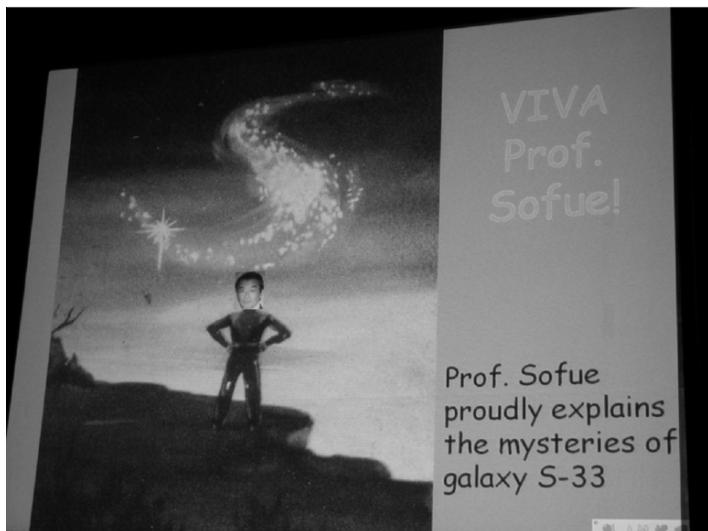
Nick Scoville and young Japanese astronomers: Hiroyuki Nakanishi, Shinya Komugi, Sachiko Onodera, Kazuhisa Kamegai, Jin Koda (from left to right)



Mayumi Sato, Masahiro Samejima, Makoto Inoue, Mark Reid, Bernd Vollmer,  
Jeff Kenney, Joanna Kenney



Mike Regan, Eva Schinnere, Lia Athanassoula, Keiichi Wada, Paul Martini, Bob Benjamin, John Beckman, Johan Knapen, Witold Maciejewski, Andreas Lundgren



From the presentation by Jeff Kenney



Yoshiaki Sofue. The conference originated from his insatiable curiosity.



Performance by Yaeyama-Shoko High School

9. Meier, D. S. & Turner, J. L. 2001, Ap.J., 551, 687
10. Sakamoto, K., Okumura, S. K., Ishizuki, S., & Scoville, N. Z. 1999, Ap.J., 525, 691
11. Schinnerer, E., Böker, T., & Meier, D. S. 2003, Ap.J. Letters, 591, L115
12. Schinnerer, E., Böker, T., Emsellem, E., & Lisenfeld, U. 2006, Ap.J., 649, 181
13. Sheth, K., Vogel, S. N., Regan, M. W., Thornley, M. D., & Teuben, P. J. 2005, Ap.J., 632, 217



Osamu Kameya, Eva Schinnerer, Fabian Walter in the receiver room of VERA.

medium. One must bear in mind that while gravitation is an omni-directional effect magnetic fields give a very uni-directional coupling. Hence quite weak fields may have a profound effect on dynamics of the ISM. It is not only a question of energy density but of real force on matter. This fact has not been exploited intensely up till now. As put in the discussion in this conference we do not know if magnetic fields are ‘the chicken or the egg’; if magnetic fields are the result of the motion of the ISM, or if magnetic fields are guiding the flow of matter. In any case we must study magnetic fields, include them in the simulations to model the whole Universe, not just a part of it.

*Acknowledgement.* I would like to acknowledge many discussions in our continuum group at the MPIfR, in particular with Dr. Rainer Beck and Dr. Wolfgang Reich.

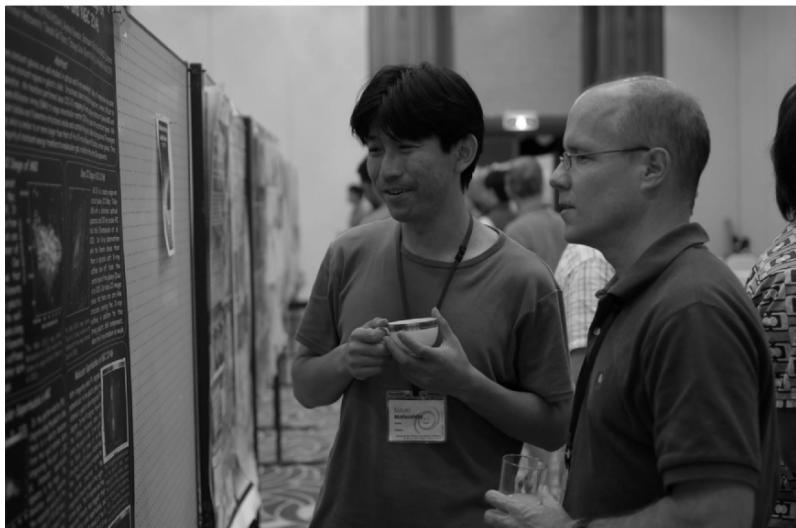


Richard Wielebinski

## References

1. I. Appenzeller: PASP 79, 600 (1967)
2. R. Beck: 2005, In: *Cosmic Magnetic Fields*, Lecture Notes in Physics, vol. 664, ed by R. Wielebinski, R. Beck (Springer, Heidelberg 2005) p. 41
3. R. Beck, B.M. Gaensler: New Astron. Rev. 48, 1289B (2004)
4. R. Beck, P. Hoernes: Nature 379, 47 (1996)
5. R. Beck, E.M. Berkhuijsen, R. Wielebinski: A&A 68, L27 (1978)
6. R. Beck, E.M. Berkhuijsen, R. Wielebinski: Nature 283, 272 (1980)
7. R. Beck, A. Brandenburg, D. Moss et al.: ARA&A 34, 155 (1996)
8. R. Beck, A. Fletcher, A. Shukurov et al.: A&A 444, 739 (2005)
9. M. Camenzind: In: *Cosmic Magnetic Fields*, Lecture Notes in Physics, vol. 664, ed by R. Wielebinski, R. Beck (Springer, Heidelberg 2005) p. 255
10. C.L. Carilli, G.B. Taylor: ARA&A 40, 319 (2002)
11. K.T. Chyzy, R. Beck: A&A 417, 541 (2004)

11. S. Matsushita, et al: ApJ, 617, 20 (2004)
12. D. S. Rupke, S. Veilleux, D. B. Sanders: ApJ, 570, 588 (2002)
13. D. S. Rupke, S. Veilleux, D. B. Sanders: ApJS, 160, 115 (2005)
14. D. S. Rupke, S. Veilleux, D. B. Sanders: ApJ, 632, 751 (2005)
15. C. M. Schwartz, C. L. Martin: ApJ, 610, 201 (2004)
16. P. L. Shopbell, J. Bland-Hawthorn: ApJ, 493, 129 (1998)
17. J. Silk: MNRAS, 343, 249 (2003)
18. Y. Sofue, T. Handa: Nature, 310, 568 (1984)
19. S. Veilleux, G. Cecil, J. Bland-Hawthorn: ARAA, 43, 769 (2005)
20. S. Veilleux, D. Rupke: ApJ, 565, L63 (2002)
21. F. Walter, A. Weiss, N. Scoville: ApJ, 580, L21 (2002)
22. S. Yamauchi, et al: ApJ, 365, 532 (1990)



Satoki Matsushita, and Sylvain Veilleux



Eiichiro Kokubo is presenting a 4-D digital universe at VERA observatory.





Jeff Kenney and Hiroyuki Nakanishi



Joshua G. Peek, Marijke Haverkorn, Evan Levine, and Ettore Carretti



Kazuo Sorai, Norio Kuno, and Wolfgang Reich

