

## Dr. Brian R. Kent

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EDUCATION **Cornell University**, Ithaca, NY, Department of Astronomy and Space Sciences  
**Ph.D.**, Astronomy and Space Sciences (2008)

- Dissertation: "Toward the Virgo Cluster: On the Study of Neutral Hydrogen in the Local Universe" with Riccardo Giovanelli and Martha P. Haynes

**M.S.**, Astronomy and Space Sciences (2006)  
**West Virginia University**, Morgantown, WV, Department of Physics  
**B.S.** in Physics with Honors, summa cum laude, Phi Beta Kappa (2003)

RESEARCH AND PROFESSIONAL EXPERIENCE **National Radio Astronomy Observatory**, Assistant Scientist 2011 - present  
**National Radio Astronomy Observatory**, Jansky Fellow 2008 - 2011

- *ALMA*. Integrated system and Observing Tool Beta Tester
- *EVLA*. Demo science of the Leo gas ring
- *Virtual Observatory*. NRAO spectral line web services.
- *Galaxy Dynamics*. Interactions within clusters, tidal interactions
- *Cosmology*. Large scale structure, mass function evolution
- *Spectral line*. Molecular and neutral gas in nearby galaxies.
- *Programming / Analysis*. Relational databases for astronomy. Web services and design. GUI design and implementation. Imaging analysis at radio wavelengths

**Cornell University**, Graduate Research 2003 - 2008

- Radio sky surveys, nearby galaxies, low *cz* cosmology, the Virgo Cluster
- Galaxy dynamics, tidal interactions, software programming, database design

**National Radio Astronomy Observatory**, NSF REU 2002

- The GBT OH Megamaser Survey with James Braatz, Jeremy Darling

**Florida International University**, NSF REU 2001

- Optical Observations of the Gamma-Ray Blazar PKS 1622-297 with James Webb

**West Virginia University**, Plasma Physics Lab 2000

- Software Programming

TECHNICAL EXPERTISE **Observing Experience**

- EVLA (co-I spectral line observations of the Leo Ring)
- VLA (PI - 24 hours of pointed long integration spectral line observations)
- VLA (co-PI - 24 hours multi configuration spectral line observations)
- GBT (50 hours commissioning for pointed OH observations)
- GBT (50 hours PI for pointed HI observations)
- Arecibo (ALFA multibeam, 120 hours as lead observer)
- Arecibo (50 hours as co-PI for pointed HI observations)
- Arecibo (10 hours as co-PI for telescope commissioning and calibration)

- Kitt Peak 0.9m (5 nights co-PI optical imaging)
- Palomar (5 nights, 2 as lead observer, optical spectroscopy)
- Cornell Computing Center: 4000 hours on 128 node cluster

### Computing Experience

- Operating Systems: UNIX (Linux, Solaris), Mac OSX, MS Windows
- Programming Languages : Python, C/C++, Java, FORTRAN
- Scientific Packages: IDL, Mathematica, MATLAB, OCTave, CASA, AIPS
- Web/Database: HTML, PHP, MySQL, SQLServer, Javascript, Ruby

### AWARDS AND FELLOWSHIPS

#### Cornell University

- Shelley Award for Graduate Research in Astronomy 2007
- Cornell Graduate Travel Grants 2004, 2005, 2007
- NVO Summer School Project Honorable Mention 2005
- NASA Space Grant Graduate Fellowship 2003-2004

#### West Virginia University

- Barry Goldwater Undergraduate Scholarship 2002-2003
- West Virginia University Outstanding Senior Physics Student 2003
- West Virginia University Foundation Scholarship 1999-2003
- Eberly College of Arts and Sciences Scholarship 2001-2003
- Eberly College Research Enrichment Awards 2002, 2003
- President's List 1999-2003

### COMMUNICATION, MEDIA, AND OUTREACH

#### NRAO, Charlottesville, VA

- US Science and Eng. Festival: *NRAO booth representative* 2010
- Charlottesville Astro Festival: *Invited talk on computing and astronomy* 2009
- UVa Cavalier Daily Interview: *Accessing Astronomy at the NRAO* 2009
- 50 years of NRAO Students: NRAO Outreach 2009

#### Cornell University, Department of Astronomy, Ithaca, NY

- Four part radio series: *Science/Life in the Universe, Radio Free Asia* 2007
- Invited talk: *Kopernicus Science Center: The Radio Universe* 2006
- Invited talks: Union College Radio Astronomy Workshop 2005,2006,2008
- Observing coordinator, Cornell Alumni Adult University 2005-2007
- Teaching Assistant, Cornell Astronomy 2004-2005
- Expanding Your Horizons (junior high students) Summer 2004
- Cornell: Ask an Astronomer 2003-2004

#### West Virginia University, Department of Physics, Morgantown, WV

- Teaching/Recitation Assistant 2000-2001

### SERVICE, COMMITTEES, AND ORGANIZATIONS

- Referee for the Astrophysical Journal, ApJ Letters, and MNRAS
- co-Chair ALMA/NRAO Assembly of Galaxies meeting, SOC and LOC
- NVO portal beta tester, NRAO Observatory Computing Council
- Cornell Astronomy Computing Committee, 2006-2008
- Arecibo Legacy Fast ALFA Survey, *Oversight Committee and Project Approval*
- Virtual Observatory Summer School Organizing Committee

- Eberly College of Arts and Sciences, *Dean's Advisory Committee*
- American Astronomical Society, American Physical Society
- Phi Beta Kappa, Golden Key, Sigma Pi Sigma Physics, Phi Kappa Honor Societies

FIRST AUTHOR  
 REFEREED  
 PUBLICATIONS

4. **Kent, B.R.** *Clouds in the Virgo Cluster Periphery: Gas-rich Optically Inert Galaxies.* 2010, ApJ, 725,2333, arXiv:1010.6095
3. **Kent, B.R.**, Spekkens, K., Giovanelli, R., Haynes, M.P., Momjian, E., Cortes, J.R., Hardy, E., West, A. *The Arecibo Legacy Fast ALFA Survey VII: A Neutral Hydrogen Cloud Complex in the Virgo Cluster.* 2009, ApJ, 691, 1595
2. **Kent, B.R.**, Giovanelli, R., Haynes, M.P., Martin, A., Stierwalt, S., Saintonge, A., Brosch, N., Catinella, B., Koopmann, R.A., Momjian, E. *The Arecibo Legacy Fast ALFA Survey: VI. Second HI Source Catalog of the Virgo Cluster Region.* 2008, AJ, 136,713
1. **Kent, B.R.**, Giovanelli, R., Haynes, M.P., Saintonge, A., Stierwalt, S., Balonek, T., Brosch, N., Catinella, B., Koopmann, R.A., Momjian, E. & Spekkens, K. *Optically Unseen HI Detections toward the Virgo Cluster detected in the Arecibo Legacy Fast ALFA Survey.* 2007, ApJL, 665, L15

REFEREED  
 PUBLICATIONS

17. Haynes, M. P., Giovanelli, R., Martin, A. M., Hess, K. M., Saintonge, A., Adams, E. A. K., Hallenbeck, G., Hoffman, G. L., Huang, S., Kent, B. R., Koopmann, R. A., Papastergis, E., Stierwalt, S., Balonek, T. J., Craig, D. W., Higdon, S. J. U., Kornreich, D. A., Miller, J. R., O'Donoghue, A. A., Olowin, R. P., Rosenberg, J. L., Spekkens, K., Troischt, P., Wilcots, E. M. *The ALFALFA alpha.40 HI Source Catalog.* 2011, AJ (accepted), arXiv:1109.0027
16. Boselli, A., ...(31 co-authors)...,**Kent, B.R.**,...(20 co-authors). *The GALEX Ultraviolet Virgo Cluster Survey (GUViCS). I: The UV luminosity function of the central 12 sq.deg.* 2011, A&A, 528, A107
15. Cortese, L., Bendo, G.J., Isaak, K.G., Davies, J.I., & **Kent, B.R.** *Diffuse far-infrared and ultraviolet emission in the NGC 4435 system.* 2010, MNRAS Letters, 403, 26L
14. Giovanelli, R., Haynes, M.P., **Kent, B.R.**, & Adams, E. *Are newly discovered HI high-velocity clouds minihalos in the local group?*, 2010, ApJL, 708L, 22
13. Spoon, H. W. W., Armus, L., Marshall, J. A., Bernard-Salas, J., Farrah, D., Charmandaris, V., **Kent, B. R.**. *High-velocity neon line emission from the ULIRG IRAS F00183-7111: revealing the optically obscured base of a nuclear outflow*, 2009, ApJ, 693, 1223
12. Stierwalt, S., Haynes, M. P., Giovanelli, R., **Kent, B. R.**, Martin, A. M., Saintonge, A., Karachentsev, I., Karachentseva, V. *The ALFALFA Survey VIII: The Leo Region HI Catalog, Group Membership and the HI Mass Function for the Leo I Group.* 2009, AJ, 138, 338

11. Martin, A. M., Giovanelli, R., Haynes, M. P., Saintonge, A., Hoffman, G. L., **Kent, B. R.**, Stierwalt, S. *The ALFALFA Survey IX. HI Source Catalog of the Anti-Virgo Region at  $\delta = +25^\circ$*  2009, ApJS, 128, 214
10. Grossi, M., di Serego Alighieri, S., Giovanardi, C., Gavazzi, G., Giovanelli, R., Haynes, M. P., **Kent, B. R.**, Pellegrini, S., Stierwalt, S. and Trinchieri, G. *The HI content of early-type galaxies from the ALFALFA survey II. The case of low density environments.* 2009, A&A, 497, 408
9. Koopmann, R.A., Giovanelli, R., Haynes, M.P., **Kent, B.R.**, Balonek, T.J.; Brosch, N., Higdon, J. L.; Salzer, J. J.; Spector, O. *A 500 kpc HI Extension of the Virgo Pair NGC 4532/DDO 137 Detected by the Arecibo Legacy Fast ALFA (ALFALFA) Survey.* 2008, ApJL, 682, 85L
8. Gavazzi, G., Giovanelli, R., Haynes, M. P., Fabello, S., Fumagalli, M., **Kent, B. R.**, Koopmann, R. A., Brosch, N., Hoffman, G. L., Salzer, J. J., Boselli, A. *HI content and other structural properties of galaxies in the Virgo cluster from the Arecibo Legacy Fast ALFA Survey.* 2008, A&A, 482, 43
7. Saintonge, A., Giovanelli, R., Haynes, M.P., Brosch, N., Hoffman, G.L., **Kent, B.R.**, Martin, A.M., & Stierwalt, S. *The Arecibo Legacy Fast ALFA Survey: IV. HI Source Catalog of the Anti-Virgo Region at Decl. =  $+27^\circ$ .* 2008, AJ, 135, 588
6. di Serego Alighieri, S., Gavazzi, G., Giovanardi, C., Giovanelli, R., Grossi, M., Haynes, M.P., **Kent, B.R.**, Koopmann, R.A., Pellegrini, S., Scodreggio, M. & Trinchieri, G. *The HI Content of Early-Type Galaxies from the ALFALFA survey: I. Catalogued HI sources in the Virgo Cluster.* 2007, A&A, 474, 851
5. Haynes, M.P., Giovanelli, R. & **Kent, B.R.** *NGC 4254: An Act of Harassment Uncovered by the Arecibo Legacy Fast ALFA Survey.* 2007, ApJL, 665, L19
4. Giovanelli, R., Haynes, M.P., **Kent, B.R.**, and 19 coauthors. *The Arecibo Legacy Fast ALFA Survey: III. HI Source Catalog of the Northern Virgo Cluster Region.* 2007, AJ, 133, 2569
3. Giovanelli, R., Haynes, M.P., **Kent, B.R.**, and 16 coauthors. *The Arecibo Legacy Fast ALFA Survey: II. Results of Precursor Observations.* 2005, AJ, 130, 2613
2. Giovanelli, R., Haynes, M.P., **Kent, B.R.**, and 37 coauthors. *The Arecibo Legacy Fast ALFA Survey: I. Science Goals, Survey Design and Strategy.* 2005, AJ, 130, 2598
1. Springob, C.M, Haynes, M.P., Giovanelli, R., **Kent, B.R.** *A Digital Archive of HI 21 Centimeter Line Spectra of Optically Targeted Galaxies.* 2005, ApJS, 160, 149

CONFERENCE

PROCEEDINGS AND BOOK CHAPTERS *The GRIDView Visualization Package.* **Kent, B.R.** 2011, ADASS XX, ASPC, 442, 625

*The Undergraduate ALFALFA Team: A Model for Undergraduate Participation and Outreach.* Martin, A. M., Koopmann, R., Higdon, S., Balonek, T. J., Haynes, M. P., Giovanelli, R., Adams, E. A. K., **Kent, B. R.**, Stierwalt, S. 2011, ASPC, 443, 273

*Astronomy Visualization for Education and Outreach.* Goodman, A. A., Udomprasert, P. S., **Kent, B.R.**, Sathiapal H., Smareglia, R. 2011, ADASS XX, ASPC, 442, 659

*ALFALFA HI Content and Star Formation in Virgo Cluster Early-Type Dwarfs.* Koopmann, R. A., Giovanelli, R., Haynes, M. P., **Kent, B.**, Brosch, N. 2010, ASPC, 423,101

*HI Clouds, Debris, and Galactic HI Toward the Virgo Region with the ALFALFA.* **Kent, B.R.** 2008, AIPC, 1035, 225

*HI Clouds detected toward Virgo with the Arecibo Legacy Fast ALFA Survey.* **Kent, B.R.** 2008, IAU Symposium, 244, 93

*HI Observations of the Virgo Cluster.* **Kent, B.R.** 2008, NRAO 50th Ann., ASPC, 395, 369

*Combining VO Services.* **Kent, B.R.** 2008, National Virtual Observatory, ASPC

*Describing Data and Data Collections.* **Kent, B.R.**, Williams, R., Hanisch, R.J. 2008, National Virtual Observatory, ASPC

*Intro to the Data Access Layer: Cone Search.* **Kent, B.R.**, Plante, R. 2008, National Virtual Observatory, ASPC

*Using Cone Search Client Applications.* **Kent, B.R.** 2008, National Virtual Observatory, ASPC

*How to build a cone search service using a local database.* **Kent, B.R.**, Greene, G. 2008, National Virtual Observatory, ASPC

*How to build a Simple Image Access Protocol service.* **Kent, B.R.** 2007, National Virtual Observatory, ASPC

#### ABSTRACTS

**Kent, B. R.** *Gas-rich Optically Inert Galaxies in the Virgo Cluster.* 2011, AAS Meeting, 217, #149.22

**Kent, B. R.** *The Virgo Cluster: HI Mass Function, Environment and Morphology.* 2010, AAS Meeting, 215, #436.14

Koopmann, R.A., Giovanelli, R., Haynes, M.P., **Kent, B.R.**, & Brosch, N. *ALFALFA HI Content and Star Formation of Early-type Dwarfs in The Virgo Cluster.* 2010, AAS Meeting, 215, #451.03

**Kent, B. R.** *Visualization tools for spectral line observations.* 2009, CARMA Science Symposium

**Kent, B. R.** *Galaxy Environment and HI in the Virgo Cluster.* 2009, NRAO/ALMA Galaxies09 meeting

**Kent, B. R.** *Gas Evolution of Galaxies and the Environmental Dependence of the HI Mass Function* 2009, NRAO Postdoc Symposium

Koopmann, R. A., Giovanelli, R., Haynes, M. P., **Kent, B. R.**, Brosch, N. *ALFALFA HI Content of Early-Type Dwarfs in the Virgo Cluster*. 2009, Stellar Populations and Star Formation in Interacting Galaxies

**Kent, B. R.** *HI and the Virgo Cluster*. 2008, NRAO/EVLA Galaxies through Cosmic Time meeting

**Kent, B. R.**, *Gas Content of Galaxies Near and Far*. 2008, NRAO/ALMA meeting: Formation of Massive Stars in the Galaxy

**Kent, B. R.**, *The Virgo Cluster: HI Characterization and Optically Inert Detections*. 2007, BAAS, 39, 952

**Kent, B. R.**, Giovanelli, R., Haynes, M. P., Saintonge, A., Stierwalt, S., Brosch, N., Catinella, B., Hoffman, G. L., Momjian, E., Rosenberg, J. L. *ALFALFA Observations of the Virgo cluster and its environs*. 2005, BAAS, 37, 1457

Stierwalt, S., Haynes, M. P., Giovanelli, R., **Kent, B.R.**, Saintonge, A., Karachentsev, I. D., Karachentseva, V. E., Brosch, N., Catinella, B., Hoffman, L., Momjian, E. *ALFALFA Survey of the Leo Region*. 2005, 37, 1480

Saintonge, A., Giovanelli, R., Haynes, M. P., **Kent, B. R.**, Stierwalt, S., Brosch, N., Catinella, B., Momjian, E. *A Signal Extraction Utility for the ALFALFA Survey*. 2005, 37, 1480

Spekkens, K., Momjian, E., **Kent, B. R.**, Giovanelli, R., Haynes, M. P., Catinella, B., Stierwalt, S., Saintonge, A. *ALFALFA Discovery of an HI Cloud Complex in the Virgo Cluster: Aperture Synthesis Observations*. 2005, 37, 1458

Koopmann, R. A., Haynes, M. P., Alonso, J., Giovanelli, R., Hoffman, G. L., **Kent, B. R.**, Stierwalt, S., Salzer, J. J. *The ALFALFA Undergraduate Workshop: Promoting Undergraduate Participation in a Legacy Survey Project*. 2005, BAAS, 37, 1458

Haynes, M. P., Giovanelli, R., **Kent, B. R.**, Saintonge, A., Stierwalt, S., Catinella, B., Momjian, E. M., Hoffman, G. L., Rosenberg, J. R., Brosch, N., Davies, J. I., Minchin, R. L. *Complex Structure in the ALFALFA HI Distribution around VIRGOHI 21*. 2005, BAAS, 37, 1457

Giovanelli, R., Haynes, M. P., **Kent, B.R.**, Saintonge, A., Stierwalt, S., Brosch, N., Hoffman, L. G., Rosenberg, J., Catinella, B., Momjian, E. *ALFALFA Discovery of an HI Cloud Complex in the Virgo Cluster*. 2005, BAAS, 37, 1457

Ayala, J. A., Stilp, A., Patel, N., Altaf, A., Goldstein, J., Forsyth, C., Gillin, M., Mahmood, B., Read, J., Vucic, L., Mullan, B., Walsh, B., Wortel, S., Stierwalt, S., **Kent, B. R.**, and 10 coauthors. *An Undergraduate Research Project within the ALFALFA Collaboration*. 2005, BAAS, 37, 1457

Haynes, M. P., Giovanelli, R., **Kent, B. R.**, Springob, C. M., Masters, K. L., Saintonge, A., Spekkens, K., Stierwalt, S. *A Digital Archive of Extragalactic HI Spectra and Access to the Arecibo Legacy Fast ALFA Survey*. 2004, BAAS, 26, 1558

Giovanelli, R., Haynes, M. P., Spekkens, K., Springob, C. M., Masters, K. L., Saintonge, A., Catinella, B., **Kent, B.R.**, Maddalena, R. J., Magnani, L., Koopmann, R. A. *Blind Extragalactic HI Surveys with the Arecibo and Green Bank Telescopes: I. Simulations and Strategies for Survey Design*. 2003, BAAS, 35, 1287

Haynes, M. P., Giovanelli, R., Springob, C. M., Saintonge, A., Spekkens, K., Masters, K. L., Catinella, B., **Kent, B.R.**, Maddalena, R. J., Magnani, L., Koopmann, R. A. *Blind Extragalactic HI Surveys with the Arecibo and Green Bank Telescopes: II. Strategies for Map Construction and Signal Detection*. 2003, BAAS, 35, 1287

Webb, J. R., Howard, E. S., Azarnia, G., **Kent, B. R.** *The Historical calibrated Light Curve of Gamma-ray Bright Quasar PKS 1622-297*. 2003, BAAS, 35, 1326

**Kent, B.R.**, Braatz, J., Darling, J. *The Green Bank Telescope OH Megamaser Survey*. 2002, BAAS, 34, 1194

**Kent, B.R.**, Webb, J. *Optical Observations of the Gamma-Ray Blazar PKS 1622-297*. 2001, BAAS, 33, 1453

**Kent, B.R.** *HI Observations with a Small Radio Telescope*. 2001, Eberly College of Arts & Sciences Student Research Symposium

**Kent, B.R.**, Soulsby, R. C., Boivin, R. F., Kline, J. L., Scime, E. E. *Heating Profile Calculations for a Helicon Plasma Source*. 2000 APS Meeting, Division of Plasma Physics, HP1.071

Balkey, M.M., Scime, E.E., Boivin, R.F., Keiter, P.A., Kline, J.L., Spangler, R.S., **Kent, B.R.**, Soulsby, R.C. *Anomalous Ion Heating in a Helicon Plasma Source*. 2000 APS Meeting, Division of Plasma Physics, MP1.006

Soulsby, R.C., **Kent, B.R.**, Balkey, M.M., Boivin, R.F., Kline, J.L., Scime, E.E. *Two-dimensional measurements of ion temperature in a helicon plasma source*. 2000 APS Meeting, Division of Plasma Physics, VP1.002

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|---------------|--|-----------|
| INVITED TALKS | <i>Visualization in Radio Astronomy</i> . Visualize 2010 meeting | May 2010  |
|               | <i>HI and the Virgo Cluster</i> . Univ. of Kentucky colloquium   | Feb. 2010 |
|               | <i>Databases for Large Surveys</i> . Arecibo Observatory         | Dec. 2009 |

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|-------------------|--|--------------|
| CONTRIBUTED TALKS | <i>Clouds Toward Virgo</i> . NRAO Postdoc Symposium            | April 2011   |
|                   | <i>Environment and Virgo</i> . ALMA conference talk, NRAO-CV   | Sept. 2009   |
|                   | <i>Environmental Dependence of the HIMF</i> . Socorro, NM      | April 2009   |
|                   | <i>Science with VO Tools</i> . NRAO Lunch Talk, NRAO-CV        | April 2009   |
|                   | <i>HI and the Virgo Cluster</i> . EVLA meeting, Socorro, NM    | Dec. 2008    |
|                   | <i>Gas-rich Detections in Virgo</i> . NRAO Lunch Talk, NRAO-CV | Sept. 2008   |
|                   | <i>Astronomical Data Mining</i> . Public Lecture, Ithaca, NY   | October 2007 |
|                   | <i>HI Clouds in Virgo</i> . IAU Symposium 244, Cardiff, UK     | June 2007    |
|                   | <i>Virgo in HI</i> . Cornell Lunch Talk Series, Ithaca, NY     | Feb. 2007    |
|                   | <i>The Radio Universe</i> . Kopernicus Obs. Public Series      | October 2006 |

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| <i>Databases for Imaging and Catalogs.</i> | NVO Summer School, Aspen, CO           | Sept. 2006 |
| <i>Combing VO Services.</i>                | NVO Summer School, Aspen, CO           | Sept. 2006 |
| <i>Building Client Applications.</i>       | NVO Summer School, Aspen, CO           | Sept. 2006 |
| <i>Combining VO Services.</i>              | NVO Summer School, Aspen, CO           | Sept. 2006 |
| <i>Cone Search:The Data Access Layer.</i>  | NVO Summer School, Aspen, CO           | Sept. 2006 |
| <i>Metadata Descriptions.</i>              | VO Summer School, Aspen, CO            | Sept. 2006 |
| <i>HI, Galaxies, and Virgo.</i>            | Cornell Summer Talk Series, Ithaca, NY | July 2006  |
| <i>HI Observations of Virgo.</i>           | ALFALFA Meeting, Ithaca, NY            | June 2006  |
| <i>HI Clouds in Virgo.</i>                 | NRAO Science Talk, Green Bank, WV      | June 2006  |
| <i>Large Radio Sky Surveys.</i>            | Cornell Summer Talk Series, Ithaca, NY | July 2005  |
| <i>Followup Databases for Astronomy.</i>   | ALFALFA Meeting, Ithaca, NY            | June 2005  |
| <i>Large Databases for Astronomy.</i>      | Arecibo Observatory                    | April 2004 |

## REFERENCES

### **Professor Riccardo Giovanelli**

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### **Professor Martha P. Haynes**

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### **Dr. Robert J. Hanisch**

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