John C. Hood II

Radically Unique • Rapid Learner

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Detail-oriented astrophysicist with 4+ years of experience with experimental cosmology and 3 years of experience with millimeter wavelength data analysis using the SPTpol 500 square degree field. I am highly organized, self-motivated, and a creative thinker.

Education

Vanderbilt University — Nashville, TN
- *Ph.D. in Physics with focus in Astrophysics; Adviser: Kelly Holley-Bockelmann* — *Aug. 2017 – expected August 2022*
  Title: *CMB Detector Development and Astronomical People watching*

Fisk University — Nashville, TN
- *M.A. Physics* — *Aug. 2015 – Aug. 2017*

Columbus State University — Columbus, GA, USA
- *B.Sc. degree in Astrophysics and Planetary Geology* — *Aug. 2009 – May 2014*
  Minors: Physics, Geology and Robotics

Research Interests

- Experimental Cosmology and Astrophysics (detectors)
- Active Galactic Nuclei
- Multi-wavelength variability correlations
- Cosmic Microwave Background

Honors and Awards

- SCGSR Fellowship - *accepted* 2020
- Dunlap Institute Instrumentation Summer School Travel Award 2016
- Larry M. Pollatta Student Acheivement Award 2014

Professional Society Memberships

- Member, American Astronomical Society (2014-2018)
- Member, National Society of Black Physicists (2017-2019)
- Student Member, Sigma Xi (2017-2019)

Scientific collaborations and Communities

- Member, South Pole Telescope Group (2018-present)
- Member, CMB-S4 (2019-present)

Teaching and Public Outreach

- Science Liaison with SPT First Discoveries Program; **2020-present** Adler Planetarium ask a scientist volunteer presenter; **2018-present**
- Space Explorers instructor, **2019**
- School for Science and Math at Vanderbilt (SSMV), Robotis and astronomy instructor; **2016-2018**
- Mobile planetarium instructor and operator, Columbus State University; **2013-2015**
- Astronomy night telescope operator, Columbus State University; **2011-2014**

First Author Publications

- Hood, J. et al. Low loss microstrip materials with MKIDs for microwave applications**in prep**
- Hood J. et al. Correlated Variability of PKS 2326-502 from Millimeter to γ-Ray's: SPTpol 500 square degree field AGN monitoring **in prep**

Selected Collaboration Publications

- Cecil, T., Barry, P., Bender, A., Chang, C., Czaplewski, D., Hood, J., Kuhlmann, S., Lisovenko, M., Meyer, S., Novosad, V., Wang, G., Yefremenko, V., Zhang, J. (2021). OMT-Coupled CMB Detector Development at Argonne. IEEE Transactions on Applied Superconductivity, 31(5), 3065270. https://doi.org/10.1109/TASC.2021.3065270
- Guns, S., Foster, A., Daley, C., Rahlin, A., Whitehorn, N., Ade, P. A. R., Ahmed, Z., Anderes, E., Anderson, A. J., Archipley, M., Avva, J. S., Aylor, K., Balkenhol, L., Barry, P. S., Basu Thakur, R., Benabed, K., Bender, A. N., Benson, B. A., Bianchini, F., … Zhang, L. (2021). Detection of Galactic and Extragalactic Millimeter-wavelength Transient Sources with SPT-3G. , 916(2), 98. https://doi.org/10.3847/1538-4357/ac06a3
- Dutcher, D., Balkenhol, L., Ade, P. A. R., Ahmed, Z., Anderes, E., Anderson, A. J., Archipley, M., Avva, J. S., Aylor, K., Barry, P. S., Basu Thakur, R., Benabed, K., Bender, A. N., Benson, B. A., Bianchini, F., Bleem, L. E., Bouchet, F. R., Bryant, L., Byrum, K., … SPT-3G Collaboration. (2021). Measurements of the E -mode polarization and temperature-E -mode correlation of the CMB from SPT-3G 2018 data. , 104(2), 22003. https://doi.org/10.1103/PhysRevD.104.022003
- Sobrin, J. A., Anderson, A. J., Bender, A. N., Benson, B. A., Dutcher, D., Foster, A., Goeckner-Wald, N., Montgomery, J., Nadolski, A., Rahlin, A., Ade, P. A. R., Ahmed, Z., Anderes, E., Archipley, M., Austermann, J. E., Avva, J. S., Aylor, K., Balkenhol, L., Barry, P. S., … Young, M. R. (2021). The Design and Integrated Performance of SPT-3G. ArXiv E-Prints, arXiv:2106.11202.
- Montgomery, J., Ade, P. A. R., Ahmed, Z., Anderes, E., Anderson, A. J., Archipley, M., Avva, J. S., Aylor, K., Balkenhol, L., Barry, P. S., Basu Thakur, R., Benabed, K., Bender, A. N., Benson, B. A., Bianchini, F., Bleem, L. E., Bouchet, F. R., Bryant, L., Byrum, K., … Young, M. R. (2021). Performance and characterization of the SPT-3G digital frequency-domain multiplexed readout system using an improved noise and crosstalk model. ArXiv E-Prints, arXiv:2103.16017.
- Balkenhol, L., Dutcher, D., Ade, P. A. R., Ahmed, Z., Anderes, E., Anderson, A. J., Archipley, M., Avva, J. S., Aylor, K., Barry, P. S., Basu Thakur, R., Benabed, K., Bender, A. N., Benson, B. A., Bianchini, F., Bleem, L. E., Bouchet, F. R., Bryant, L., Byrum, K., … Young, M. R. (2021). Constraints on CDM Extensions from the SPT-3G 2018 EE and TE Power Spectra. ArXiv E-Prints, arXiv:2103.13618.
- The CMB-S4 Collaboration, :, Abazajian, K., Addison, G. E., Adshead, P., Ahmed, Z., Akerib, D., Ali, A., Allen, S. W., Alonso, D., Alvarez, M., Amin, M. A., Anderson, A., Arnold, K. S., Ashton, P., Baccigalupi, C., Bard, D., Barkats, D., Barron, D., … Zonca, A. (2020). CMB-S4: Forecasting Constraints on Primordial Gravitational Waves. ArXiv E-Prints, arXiv:2008.12619.

Contributed Talks/Posters

- Low loss microstrip materials for microwave applications: for the South Pole Telescope; Fisk-Vanderbilt Bridge Research Celebration Day, **Talk, 2021**
- Alumni spotlight presentation; Coca-Cola Space Science Center 20th Anniversary Ceremony, **Talk, 2019**
- Design and Implementation of a Polarization Sensitive Antenna Centered at 90GHz; CMB-S4 Collaboration Meeting, **Poster, 2019**
- Columbus State University: Underrepresented Groups in the Earth, Environmental and Space Sciences: A Panel Discussion with Alumni and Students from Columbus State University's Department of Earth and Space Sciences, **panelist, 2020**
- Columbus State University: ESS Seminar; Optical Gamma-Ray "Orphan Flares" and SMARTS Fermi-Bright Blazars, **Talk, 2018**
- Hood, J. et. al (2014). CSU's MWV Observatory: A Facility for Research, Education and Outreach. American Astronomical Society Meeting Abstracts #223, 223, 446.01.
- Perry, M., McCarty, C., Bartow, M., Hood, J. C., Lodder, K., Johnson, M., Cruzen, S. T., Williams, R. N. (2013). Columbus State University Global Observation and Outreach for the 2012 Transit of Venus. American Astronomical Society Meeting Abstracts #221, 221, 433.03.
- Johnson, M., Hood, J., Williams, R. N. M., Cruzen, S., Johnson, C. (2010). Mead Observatory WebCasts: Public Outreach to the World. American Astronomical Society Meeting Abstracts #215, 215, 468.06.
- Johnson, M., Hood, J., Cruzen, S. T., Williams, R. N. M. (2007). RISO: A New Online Tool for Bringing the Sun into the Classroom. American Astronomical Society Meeting Abstracts, 211, 70.02.
- Johnson, M., Hood, J., Cruzen, S. T. (2006). Solar Education and Outreach at Columbus State University's Mead Observatory. American Astronomical Society Meeting Abstracts, 209, 94.05.

Academic References

- References available upon request