John C. Hood II

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Observational astrophysicist searching for correlated variabilities in multi wavelength observations of Active Galactic Nuclei and experimental cosmologist 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, 2018-2020

- *Ph.D. Astrophysics; Advisers: Kelly Holley-Bockelmann, Stephan Meyer*
  Title: *CMB Detector Development and Astronomical People watching*

Fisk University Nashville, TN, USA

- *M.A. Physics; Adviser: Jedidah Isler* *08/15 – 08/17*
  Title: *The Search for Orphan Flares via Multi-waveband Observations of Fermi Bright Blazars*

- **Columbus State University** Columbus, GA, USA
  B.Sc. degree in Astrophysics and Planetary Geology; Minors: Physics, Geology and Robotics *08/09 – 05/14*

Research Interests

- Experimental Cosmology and Astrophysics
- Active Galactic Nuclei
- Multi-wavelength Variability Correlations
- Machine Learning / Artificial Intelligence
- Cosmic Microwave Background

Skills

- Machine tools/ applications
- proficient in Python
- proficient in data visualization
- proficient in LaTeX
- adept in IRAF
- adept in GDSpy

Honors and Awards

- SCGSR Fellowship - *accepted*
- GAANN Fellowship
- Dunlap Institute Instrumentation Summer School Travel Award
- Bridge Graduate Research Fellowship
- Larry M. Pollatta Student Acheivement Award
- Georgia Institute of Museum and Library Services IMLS Grant
- Georgia Space Grant

Professional Society Memberships

- Member, National Society of Black Physicists 2017-2019
- Student Member, Sigma Xi 2017-2019
- Society of Amateur Radio Astronomers SARA 2015-2019
- Member, American Astronomical Society 2014-2018

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
- ARP Argonne ACT-SO student mentor 2020-2021
- Adler Planetarium ask a scientist volunteer presenter 2018-present
- Space Explorers instructor 2018-2019
- School for Science and Math at Vanderbilt (SSMV), Robotics and astronomy instructor 2016-2018
- Pulsar Search Collaboratory, Mentor 2016
- Mobile planetarium instructor and operator, Columbus State University 2013-2015
- Astronomy night telescope operator, Columbus State University 2011-2014

Observing Experience

- 1 month of experience operating and maintaining the 10m South Pole Telescope Winter 2019
- 200 hours of deep sky surveying; West Rock Observatory's 0.6m telescope 2013 – 2015
- 500+ hours of solar monitoring; West Rock Observatory's 0.6m telescope 2011 – 2015

Positions Held

- Mead WestVaco Observatory Technician, Coca-Cola Space Science Center 2014-2015
- Education and Outreach Coordinator, Coca-Cola Space Science Center 2012-2015

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. A Search for Optical and Gamma-ray "Orphan Flares" in the SMARTS Sample of Fermi-Bright Blazars", 230th AAS Meeting (Poster 44), Austin Texas **Poster, 2017**
- **Hood, J.** et al. CSU's MWV Observatory: A Facility for Research, Education and Outreach. American Astronomical Society Meeting Abstracts #223, 223, 446.01. **Poster, 2014**
- **Hood, J.** et al. (2014) "Da-Klaw, Columbus State Universities Robotic Hand" project talk at the ICRAR, Florida International University, Miami, Florida **Talk, 2014**
- Perry, M., McCarty, C., Bartow, M., **Hood, J.**., Lodder, K., Johnson, M., Cruzen, S. T., Williams, R. N. Columbus State University Global Observation and Outreach for the 2012 Transit of Venus. American Astronomical Society Meeting Abstracts #221, 221, 433.03. **Poster, 2013**
- Johnson, M., **Hood, J.**, Williams, R. N. M., Cruzen, S., Johnson, C. Mead Observatory WebCasts: Public Outreach to the World. American Astronomical Society Meeting Abstracts #215, 215, 468.06. **Poster, 2010**
- 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. **Poster, 2007**
- Johnson, M., **Hood, J.**, Cruzen, S. T. Solar Education and Outreach at Columbus State University's Mead Observatory. American Astronomical Society Meeting Abstracts, 209, 94.05. **Poster, 2006**

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**)
- 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.,**Hood, J.**, … 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.,**Hood, J.**, … 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.,**Hood, J.**, … 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.,**Hood, J.**, … 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.,**Hood, J.**, … Zonca, A. (2020). CMB-S4: Forecasting Constraints on Primordial Gravitational Waves. ArXiv E-Prints, arXiv:2008.12619.

Academic References

- References available upon request