

# John C. Hood II

*Radically Unique • Rapid Learner*

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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

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| <b>Vanderbilt University</b>   | Nashville, TN, USA |
| • <i>Ph.D. in Physics with focus in Astrophysics; Advisers: Kelly Holley-Bockelmann, Stephan Meyer</i> | 08/17 – 08/22      |
| Title: <i>CMB Detector Development and Astronomical People watching</i>                                |                    |
| <b>Fisk University</b>   | Nashville, TN, USA |
| • <i>M.A. Physics with focus in Astrophysics; Adviser: Jedidah Isler</i>                               | 08/15 – 08/17      |
| Title: <i>The Search for Orphan Flares via Multi-waveband Observations of Fermi Bright Blazars</i>     |                    |
| <b>Columbus State University</b>   | Columbus, GA, USA  |
| • <i>B.Sc. degree in Astrophysics and Planetary Geology; Minors: Physics, Geology and Robotics</i>     | 08/09 – 05/14      |

## RESEARCH INTERESTS

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- Experimental Cosmology and Astrophysics (detectors)
- Active Galactic Nuclei
- Machine Learning / Artificial Intelligence
- Multi-wavelength variability correlations
- Cosmic Microwave Background

## SKILLS

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

## HONORS AND AWARDS

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| • SCGSR Fellowship - <i>accepted</i>                          | 2020      |
| • GAANN Fellowship  | 2016-2017 |
| • Dunlap Institute Instrumentation Summer School Travel Award | 2016      |
| • Bridge Graduate Research Fellowship                         | 2015-2016 |
| • Larry M. Pollatta Student Achievement Award                 | 2014      |
| • Georgia Institute of Museum and Library Services IMLS Grant | 2013-2014 |
| • Georgia Space Grant   | 2011-2013 |

## PROFESSIONAL SOCIETY MEMBERSHIPS

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- 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

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

## TEACHING AND PUBLIC OUTREACH

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- 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), Robotis 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

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

## POSITIONS HELD

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

## FIRST AUTHOR PUBLICATIONS

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- 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  $\gamma$ -Ray's: SPTpol 500 square degree field AGN monitoring **in prep**

## SELECTED COLLABORATION PUBLICATIONS

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- 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

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- 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.C. 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. C., 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**

## ACADEMIC REFERENCES

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- References available upon request