

EDUCATION AND EMPLOYMENT

PhD (2009), physics, University of Maryland, College Park, MD; Postdoc (2009/9-2011/11), University of Colorado, Boulder, CO; NASA postdoc program fellow (11/2011-12/2014), GSFC/NASA; Assistant research scientist (2014-2019), University of Maryland, College Park, MD; Assistant professor in Space Science, University of Alabama in Huntsville (2019-present).

CLASSES TAUGHT

SPA 624 - Space Physics I

SPA 628 - Solar Physics.

AWARDS

ORAU Ralph E. Powe Junior Faculty Enhancement Award, 2020.

Inaugural NASA Heliophysics Early Career Investigator Program Award, 2019.

Inaugural René Pellat Memorial Festival Prize, CEA, France, 2017.

NASA Postdoc Program fellowship, 2011.

RESEARCH INTERESTS

- Particle acceleration and transport in the atmosphere of the Sun, heliosphere and magnetosphere.
- Nonlinear Plasma Instabilities, plasma heating, and coherent emission in space plasma and its application to solar radio bursts.
- The origin and acceleration of solar wind and solar wind turbulence and connection to coronal heating.
- The onset of fast magnetic reconnection and its application in explosive events in space and astrophysics, such as magnetospheric substorm, solar flares and Gamma-ray bursts.

SELECTED PUBLICATIONS

Che, H., and G. P. Zank, “Electron Acceleration from Expanding Magnetic Vortices During Reconnection with a Guide Field”, *Astrophys. J*, Vol. 889:11, 2020.

Che, H., Goldstein, M. L., Salem, C. S. and Viñas, A. F. “The Solar Wind Electron Halo as Produced by Electron Beams Originating in the Lower Corona: Beam Density Dependence”, *Astrophys. J*, 883:151, 2019

Che, H., “How Nanoflares Produce Kinetic Waves, Nano-Type III Radio Bursts, and Non-Thermal Electrons in the Solar Wind”, *Journal of Physics: Conference Series*, 2018.

Che, H., Goldstein, M., Diamond, P., and R. Sagdeev, “How electron two-stream instability drives cyclic Langmuir collapse and continuous coherent emission”, *Proceedings of the National Academy of Sciences*, vol. 114, issue 7, 2017

Che, H. and Goldstein, M. L., “The Origin of Electron Halo in the Solar Wind Electron Velocity Distribution Function: Connection to Nanoflares in the Solar Corona”, 2014, *Astrophys. J Lett.*, Vol 795, L38

Che, H. , Drake, J. F., Swisdak, M. “ A Current Filamentation Mechanism for Breaking Magnetic Field Line during Reconnection”, 2011, *Nature*, Vol 474, P184.

Drake, J. F., Swisdak, M., **Che, H.**, Shay, M. A. “Electron Acceleration from Contracting Magnetic Island During Reconnection”, 2006, *Nature*, Vol 443, p553.

Che, H. , Yang, Y., Nemiroff, R. J. “ Source Density Evolution of Gamma-Ray Bursts”, 1999, *Astrophys J.*, 516, 559

Che, H. , Yang, Y., Wu, M., Li, T. P., “Test for Cosmological Time Dilation in Long Gamma-Ray Bursts”, 1997, *Astrophys. J. Lett.*, 477, L69