

Suwicha Wannawichian, Asst. Prof. (PhD)

Department of Physics and Materials

Faculty of Science, Chiang Mai University

239 Huaykaew Road, T. Suthep, Mueng District, Chiang Mai
50200 THAILAND

Tel: 668-610-54204

Email: suwicha.w@cmu.ac.th, suwichawan@gmail.com



Education B.S., Physics, Chiangmai University, 1998

M.A., Physics, Chulalongkorn University, 2001

Ph.D., Astronomy, Boston University, 2011

PhD Dissertation: Auroral Emissions and Electromagnetic Interactions between
Giant Planets and Their Satellites Adviser: Prof. John T. Clarke

Appointments

2003 – 2009 Graduate Student Research Assistant in Astronomy at Boston University

Adviser: Prof. John T. Clarke

2007 – 2008 Graduate Student Teaching Fellowship in Astronomy at Boston University

2001 – 2002 Graduate Student Research Assistant in Physics at Chulalongkorn University

Adviser: Prof. David Ruffolo

Publication

Chaiyaporn S., **S. Wannawichian**, *Correlation between Io's lead angle and the satellite's magnetic footprint*, Journal of Physics: Conference Series, 901(1),012012, 2017

Haewsantati. K., **S. Wannawichian**, J. T. Clarke, J. D. Nichols, *Auroral bright spot in Jupiter's active region in corresponding to solar wind dynamic*, Journal of Physics: Conference Series,901(1),012013, 2017

Jamlongkul P., **S. Wannawichian**, et al., *Time Variations of Oxygen Emission Lines and Solar Wind Dynamic Parameters in Low Latitude Region*, Journal of Physics : Journal of Physics: Conference Series, 901(1),012006, 2017

Loylip, T., **S. Wannawichian**, *Elemental composition analysis of stony meteorites discovered in Phitsanulok, Thailand*, Journal of Physics: Conference Series, 901(1),012005, 2017

Dueantakhu, S., **S. Wannawichian**, *Orbital Shapes of Asteroids in Cometary Orbits based on 0.7m Telescope Imaging*, Journal of Physics: Conference Series, 901(1),012008, 2017

Kasonsuwan, K., **S. Wannawichian**, T. Kirdkao, *Observation of GEO Satellite above Thailand's Sky*, Journal of Physics: Conference Series, 901(1),012009, 2017

Wannawichian, S., J. T. Clarke, J. D. Nichols, *Angular Extension of Io Magnetic Footprint in Response to Io's Locations*, Chiang Mai J. Sci., 2016, 43(4), p.870-875

Wannawichian, S., T. Promfu, *Temporal variations of Io's magnetic footprint brightness*, Publications of the Korean astronomical society, 2015, 30, 9, 061-064

Promfu, T., **S. Wannawichian**, John T. Clarke, Jonathan D. Nichols, and U. Sawangwit, *Influence of Magnetospheric Plasma on Aurora at Magnetic Footprints of Io*, Proceeding: Siam Physics Congress 2015, 20-22 May 2015, Sofitel Krabi Phokeethra Golf and Spa Resort, Krabi, Thailand, AST, p.15-17

Wannawichian, S., J. T. Clarke, F. Bagenal, W. H. Smyth, C. A. Peterson, and J. D. Nichols, *Longitudinal modulation of the brightness of Io's auroral footprint emission: Comparison with models*, J. Geophys. Res. Space Physics, 2013, 118, doi:10.1002/jgra.50346

Wannawichian S., Clarke J T, Nichols J D. *Ten years of Hubble Space Telescope observations of the variation of the Jovian satellites' auroral footprint brightness*, Journal of Geophysical Research, 2010; 115, doi:10.1029/2009JA014456

Clarke J T, Nichols J, Gerard J-C, Grodent D, Hansen K C, Kurth W, Gladstone G R, Duval J, **Wannawichian S**, et al. *Response of Jupiter's and Saturn's auroral activity to the solar wind*, Journal of Geophysical Research, 2009, 114, A05210, doi:10.1029/2008JA013694.

Nichols, J D, Clarke J T, Cowley S H, Duval J, Farmer A J, Gérard J-C, Grodent D, **Wannawichian S**. *Oscillation of Saturn's southern auroral oval*, Journal of Geophysical Research, 2008, 113, A11205, doi:10.1029/2008JA013444

Wannawichian S, Clarke J T, Pontius D H. *Interaction evidence between Enceladus' atmosphere and Saturn's magnetosphere*, Journal of Geophysical Research, 2008, 113, doi: 10.1029/2007JA012899.

Clarke J T, Gérard J-C, Grodent D, **Wannawichian S**, et al. *Morphological differences between Saturn's ultraviolet aurorae and those of Earth and Jupiter*, Nature, 2005, 433, 717-719.

Wannawichian S, Ruffolo D, Kartavykh Yu Yu. *Ionization Fractions of Slow Ions in a Plasma with Kappa Distributions for the Electron Velocity*, Astrophysical Journal Supplement Series, 2003, 146, 443-457.

Presentations

Wannawichian S., A. Laphirattanakul, J. T. Clarke, *Io Magnetic Footprint Morphology: Brightness in Corresponding to Angular Size*, 2017 Asia-Pacific Regional IAU Meeting, 3-7 July 2017, Taipei International Convention Center, Taipei, Taiwan

Haewsantati. K., **S. Wannawichian**, J. T. Clarke, J. D. Nichols, *Variations of Bright Spot emission in Jupiter's Polar Aurora*, the 20th Magnetospheres of the Outer Planets Conference, 12 - 16 June 2017, Uppsala University, Uppsala, Sweden

Promfu, T., J. D. Nichols, **S. Wannawichian**, J. T. Clarke, *The shift of Ganymede's magnetic footprint under influence of plasma pressure anisotropy*, the 20th Magnetospheres of the Outer Planets Conference, 12 - 16 June 2017, Uppsala University, Uppsala, Sweden

Wannawichian S., A. Laphirattanakul, J. T. Clarke, U. Sawangwit, *Angular Extension of Io Magnetic Footprint in Corresponding to Io's Longitudinal Variation*, Siam Physics Congress, 8-10 June 2016, Baansuan-Khuntha and Golf Resort Hotel, Ubon Ratchathani, Thailand

Haewsantati K., **S. Wannawichian**, *The study of Jupiter's aurora : bright spot variation in active region*, Siam Physics Congress, 8-10 June 2016, Baansuan-Khuntha and Golf Resort Hotel, Ubon Ratchathani, Thailand

Jamlongkul P., **S. Wannawichian**, *Earth's auroral activity at polar region in responding to solar wind dynamic*, Siam Physics Congress, 8-10 June 2016, Baansuan-Khuntha and Golf Resort Hotel, Ubon Ratchathani, Thailand

Wannawichian S., J. T. Clarke, J. D. Nichols, U. Sawangwit, *Angular Extension of Io Magnetic Footprint in Corresponding to Volcanic Activity on Io*, Siam Physics Congress, 20-22 May 2015, Sofitel Krabi Phokeethra Golf and Spa Resort, Krabi, Thailand

Promfu T., **S. Wannawichian**, J. T. Clarke, J. D. Nichols, and U. Sawangwit, *Influence of Magnetospheric Plasma on Aurora at Magnetic Footprints of Io*, Siam Physics Congress, 20-22 May 2015, Sofitel Krabi Phokeethra Golf and Spa Resort, Krabi, Thailand, AST 15-17

Wannawichian S. and T. Promfu, *Temporal variations of Io's magnetic footprint brightness*, 12th Asia-Pacific Regional IAU Meeting (APRIM), August 18-22, 2014 CDD, Daejeon, South KOREA

Wannawichian S., W. Krittinatham and J. T. Clarke, *Electrodynamic interaction at Io as the initial parameter of auroral footprint emission at Jupiter*, Siam Physics Congress: SPC2013, March 21-23, 2013, Chiang Mai Grand View Hotel, Chiang Mai, Thailand

Sitarachu K. and **S. Wannawichian**, *Longitudinal variation of expected highest plasma density in Jupiter's magnetosphere based on the observations of Io's magnetic footprint emissions*, The Southeast Asian Young Astronomers Collaboration (SEAYAC), November 2-5, 2012, the Legend Hotel, Puerto Princesa City, Palawan, Philippines

Awards and Honors

1994 – 2005 Scholarship from the Royal Thai Government

Society Memberships

Student Member of the American Geophysical Union (AGU)
Greater Boston Organization of Thai Students and Scholars (GBOTS)

Research Interest: Connection to research in Antarctica

Influential factors on Jupiter's and Earth's auroral variability

Aurora on Jupiter behaves with variation different from those on Earth. The difference is a result of intense magnetic field at Jupiter, which is approximately 4 times stronger than Earth's magnetic field. In addition, the generated energy of magnetospheric plasma is much more immense due to Jupiter's 9.92 hours rotation period, which is much faster than Earth's rotation, 24 hours. Magnetic field strength and rotation period are the main parameters controlling planets' magnetospheric boundary and ability to withstand the influence of solar wind's dynamic pressure. At Jupiter, the magnetosphere extends to larger distance in comparison with Earth's magnetosphere. Comparing with Earth's aurora, Jupiter's aurora is approximately 100 times brighter and more independent to solar wind condition.

The understanding about influential factors of auroral variabilities on Earth and Jupiter will play an important role in revealing of magnetohydrodynamics interactions inside planets.