# 2023 Workshop: STEVE an MIT phenomenon

Long title
Interconnections between STEVE and other subauroral phenomena, and their impact on the magnetosphere-ionosphere-thermosphere system
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Description

STEVE is an optical manifestation of an intense SAID and appears as a latitudinally confined mauve emission that covers a large longitudinal sector in the night-sky below the latitude of the traditional (and well-known) auroral region.. Although several studies have established a set of tell-tale characteristics and properties of STEVE, a thorough understanding of the formation and evolution of the structure in the highly coupled magnetosphere-ionosphere-thermosphere (M-I-T) system and—in particular—its connection to other subauroral phenomena— remains to be an exciting and unresolved geospace community challenge. In the proposed workshop we aim to (1) summarize the efforts of the annual STEVE Community Workshop and present a “state of the science” for STEVE and other subauroral phenomena, (2) establish context of these phenomena to the broader CEDAR community with brief scene setting talks, and (3) discuss the path forward towards closing open science question and potential synergies and collaborations amongst the community, facilitated by a panel of experts.

Agenda

**Connect to our workshop virtually: CONNECT HERE**

**Part A – Scene setting talks (30 min)**

- Toshi Nishimura (Boston University)—STEVE, SAR arcs, and SAID measurements in the subauroral ionosphere
- Matt Zettergren (Embry-Riddle)—Modeling the subauroral ionosphere

**Part B – Panel Discussion with experts: Are we ready to measure SAIDs faster than 5 km/s? (1 hour)**

- Phil Anderson (UT Dallas)
- David Knudsen (U of Calgary)
- Rob Pfaff (NASA/GSFC)
- Simon Shepherd (Dartmouth)
- Bill Bristow (Penn State)
- Mike Ruohoniemi (Virginia Tech)
- Phil Erickson (MIT Haystack Observatory)

**Part C – Students' science highlights (15 min)**

- Claire Gasque (UC Berkeley)—It's Not Easy Being Green: Kinetic Calculations Simulating the Emission Spectra of the Picket Fence

Justification

In the last few years, two STEVE workshops have been held with the support of NSF. These workshops have provided a venue for discussions of observations, campaign event analysis, and theoretical approaches on the topic STEVE and the subauroral region in general, as well as evaluations of modeling capabilities. While these workshops are well attended and collaborations have flourished, the proposed CEDAR workshop will provide an opportunity for discussion open to the whole MITM within the broader CEDAR and citizen science communities.

Summary

Our two hour session will be divided in three main parts. The first 30-minutes would be dedicated to bring the community up speed on STEVE-related research. We will have two fantastic speakers that teaching us about measuring and modeling STEVE, SAIDs, and the sub-auroral region. The next hour is dedicated to a discussion with a panel of experts around a very simple question: Are we ready to measure SAIDs faster than 5km/s? We will end the session with a highlight of students' research.

We invite the community to join us in the discussion of STEVE and sub auroral science!

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Explore exchange processes at boundaries and transitions in geospace
Workshop format
Panel Discussion
Keywords
Subauroral Science, STEVE, SAR arcs, SAID
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