



A high-temporal resolution SupraThermal Ion Spectrometer concept for future Heliospheric (STISH) missions

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Low energy suprathermal ion are likely seed particle source for shock-accelerated SEPs and other energetic particle populations in the heliosphere. They are found to contribute significantly either close to the Sun as part of a solar energetic particle event, or locally at 1 AU as a energetic storm particle event. Traditionally these particles are measured using energy-per-charge (E/Q) and time-of-flight by energy (TOFxE) technique. However, a spherical E/Q analyzer has the inherent difficulty in duty cycle, hence, high temporal measurements of the suprathermal particles have never been made. We are developing a new suprathermal ion spectrograph that measure energetic ions from 3 to 150 keV/q. The proposed instrument concept will use a new E/Q disperser design that allows us to cover the entire energy range in 5 voltage steps, hence dramatically enhancing the duty cycle of the instrument (a factor of 10). Two TOF sections (one with position sensitive anode) will be used to augment the E/Q measurement to resolve charge and element.