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The Colorado Solar Wind Experiment TOBIN MUNSAT, JIA HAN, MIHALY HORANYI, ZACH ULIBARRI, XU WANG, LIHSIA YEO, University of Colorado — The Colorado Solar Wind Experiment (CSWE) is a new device developed at the Institute for Modeling Plasma, Atmospheres, and Cosmic Dust (IMPACT) at the University of Colorado. This large ion source is for studies of the interaction of solar wind plasma with planetary surfaces and cosmic dust, and for the investigation of plasma wake physics. With a plasma beam diameter of 12 cm at the source, ion energies of up to 1 keV, and ion flows of up to 1 mA/cm², a large cross-section Kaufman Ion Source is used to create steady state plasma flow to model the solar wind in an experimental vacuum chamber. Chamber pressure can be reduced to 3e-5 Torr under operating conditions to suppress ion-neutral collisions and create a uniform ion velocity distribution. Diagnostic instruments such as a double Langmuir probe and an ion energy analyzer are mounted on a two-dimensional translation stage that allow the beam to be characterized throughout the chamber. Early experiments include the measurement of dust grain charging from the interaction with flowing plasma, and measurements of the plasma sheath created by the interaction of the flowing plasma impinging on a surface with a dipole magnetic field. This poster will describe the facility and the scientific results obtained to date.

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