

**Abstracts** for the Joint

Astronomy Education Workshop and  
biannual meeting of the Nebraska Chapter of the American Association of Physics Teachers Meeting  
Saturday, October 24

Plenary 1 9:30 am CT

Britt Lundgren

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Co-Chair of Education and Public Outreach, SDSS-IV Collaboration

**Incorporating SDSS data into astronomy education at the high school & college level**

Abstract: For nearly two decades the Sloan Digital Sky Survey (SDSS) has made its professional astronomical data freely available to the world. The immense archival imaging and spectroscopic datasets of the SDSS, coupled with its multiple access points and interfaces suitable for users of all levels of experience, provide a novel sandbox for audiences from a wide range of backgrounds to explore and engage with the data while cultivating interests and proficiency in astronomy. These resources have facilitated inquiry-based activities for thousands of students learning science, technology, engineering and mathematics (STEM) subjects, from elementary through graduate school, and through after-school and informal education programs. This talk will present the latest freely accessible educational activities from the SDSS, appropriate for high school and college level explorations.

Plenary 2 11:00 am

Gay Stewart

West Virginia University

**Sloppy Physics**

Abstract: Energy and systems are crosscutting concepts, and physics is the place to help students develop deep conceptual understanding. However, students hear what we say, not what we mean! Simplifying our discussions can generate increased confusion. What could be a single approach to solving a wide variety of problems becomes compartmentalized into many special cases to be memorized. Such descriptions were avoided in the AP Physics 1 and 2 framework, but are still commonly used. What we mean is so clear to those of us “in the club” that assessments are not always designed to elicit incorrect models many students hold. In Learning and Understanding (2002), the National Research Council presented design principles vital to improving the effectiveness of AP/introductory college physics. Focusing on key ideas and providing ample opportunities to explore them in depth is one recommendation perfectly served by a more careful (less sloppy) approach to defining the models we use. For four examples of common wording that can generate incorrect models, we share how small changes can help students develop a coherent conceptual model that significantly impacts their ability to use more robust problem-solving approaches and to describe and model physical situations.

Interactive Session 1 1:00 pm

Andrew Duffy

Boston University

**HTML5 Simulations in Physics & Astronomy**

Abstract: The workshop will begin with some show-and-tell, looking at various ways this collection of 200+ introductory physics simulations can be used. Examples include lab applications, online homework, and simulations embedded in an interactive e-book. They can also be used in class by you or your students to explore concepts (including gravitation, which is where these overlap with astronomy). We'll then move on to talk about ways you can add value to them, either by modifying these or writing your own simulations, or by writing curricular materials, such as worksheets, to go with them. The main goal is to have everyone come away with something they can use in their own classrooms.

Interactive Session 2 2:30 pm (90 minutes)

Gai Zasowski, University of Utah &

Britt Lundgren - University of North Carolina at Asheville

**Educational Activities using SDSS Plates**

Abstract: Thousands of iconic aluminum spectroscopic plug plates, used by the Sloan Digital Sky Survey to make the largest-ever 3D map of the night sky, are finding new life in astronomy classrooms and outreach centers. This interactive workshop will demonstrate the latest hands-on activities (available in both English and Spanish), which use these physical pieces of the survey as a starting point for introducing students to fundamental concepts in astronomy. Attendees will be able to order a plate for their own classrooms after the workshop at no charge.