Contribution ID: **31** Type: **Talk**

Integral Field Spectroscopy and the Hobby Eberly Telescope Dark Energy Experiment (HETDEX)

Saturday, 4 May 2013 15:15 (30 minutes)

The discovery of dark energy as a mysterious force that is accelerating the expansion of the universe has become one of the most exciting problems of modern astrophysics. Not coincidentally, the Nobel Price for Physics in 2011 was awarded to Saul Perlmutter, Brian P. Schmidt, and Adam G. Riess, whose work on distant supernova distance determinations eventually lead to this discovery. Yet the very nature of Dark Energy is not understood at all. Various groups worldwide are trying to measure the way the expansion of our universe changes with cosmic time in order to test theories of dark energy. Amongst those efforts, the Hobby Eberly Telescope Dark Energy Experiment attempts to map the spatial distribution of 0.8 million Lyman-alpha emitting galaxies (LAE) with redshifts 1.9 < z < 3.5 over a 420 sq. deg. area (9 Gpc^3) in the north Galactic cap to constrain the expansion history of the Universe to 1% and provide significant constraints on the evolution of dark energy. As opposed to targeted redshift surveys, emission line surveys that are planned to discover LAE with integral field spectroscopy (IFS) offer significant gains over conventional narrowband imaging techniques, and provide greater sensitivity and wavelength coverage, as well as true spectroscopy. I shall present a general overview over IFS, discuss different competing IFS technologies, and explain the unique features of VIRUS, the Visible Integral-field Replicable Unit Spectrograph, which is currently being built for the Hobby-Eberly-Telescope at McDonald Observatory, Texas.

Primary author: ROTH, Martin (Leibniz Institut für Astrophysik Potsdam, Germany)

Presenter: ROTH, Martin (Leibniz Institut für Astrophysik Potsdam, Germany)

Track Classification: STARS2013