

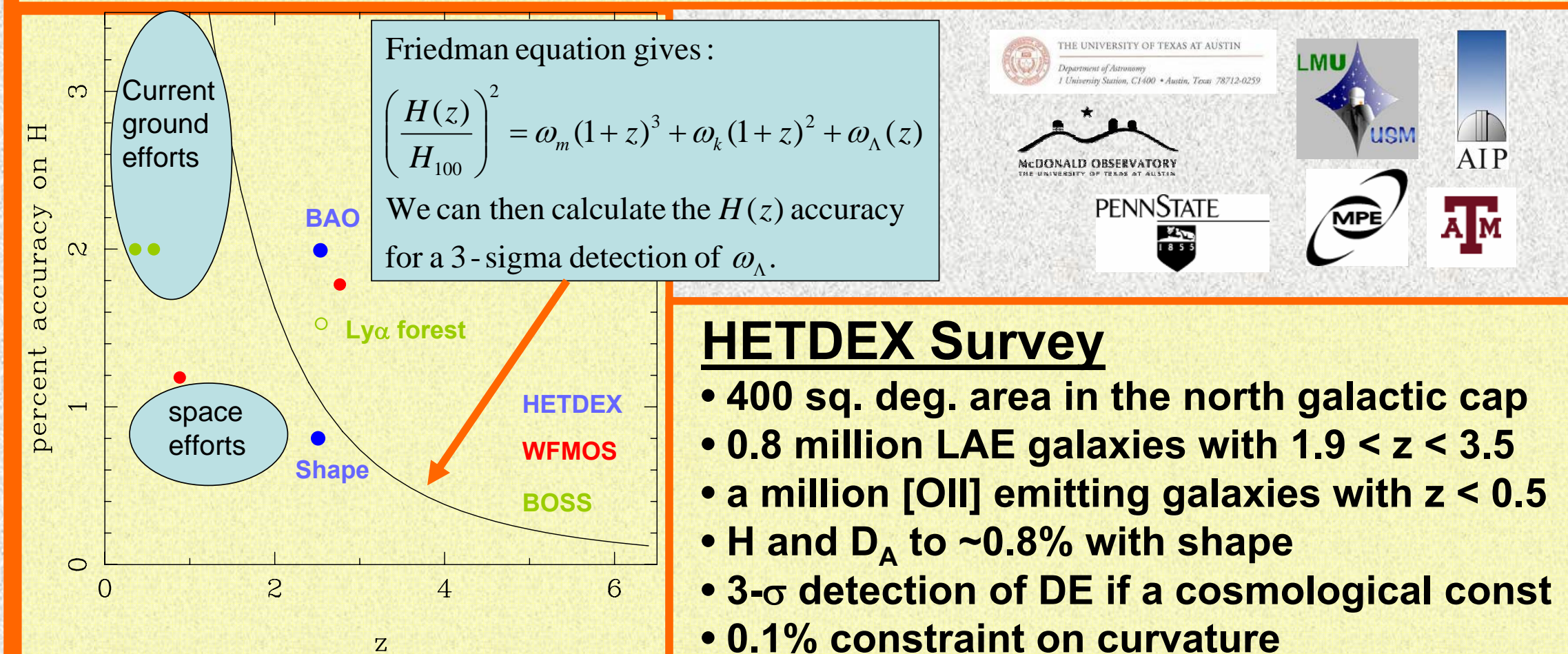
Gary. J. Hill, for the HETDEX Consortium

HETDEX is a collaboration of McDonald Observatory & Department of Astronomy, University of Texas at Austin, Max-Planck-Institut für Extraterrestrische-Physik, Astrophysikalisches Institut Potsdam, Penn State University, Texas A&M, and the HET consortium

Abstract

The Hobby-Eberly Telescope Dark Energy Experiment (HETDEX) aims to make a direct detection of dark energy at $z \sim 3$, in the case that it is a cosmological constant.

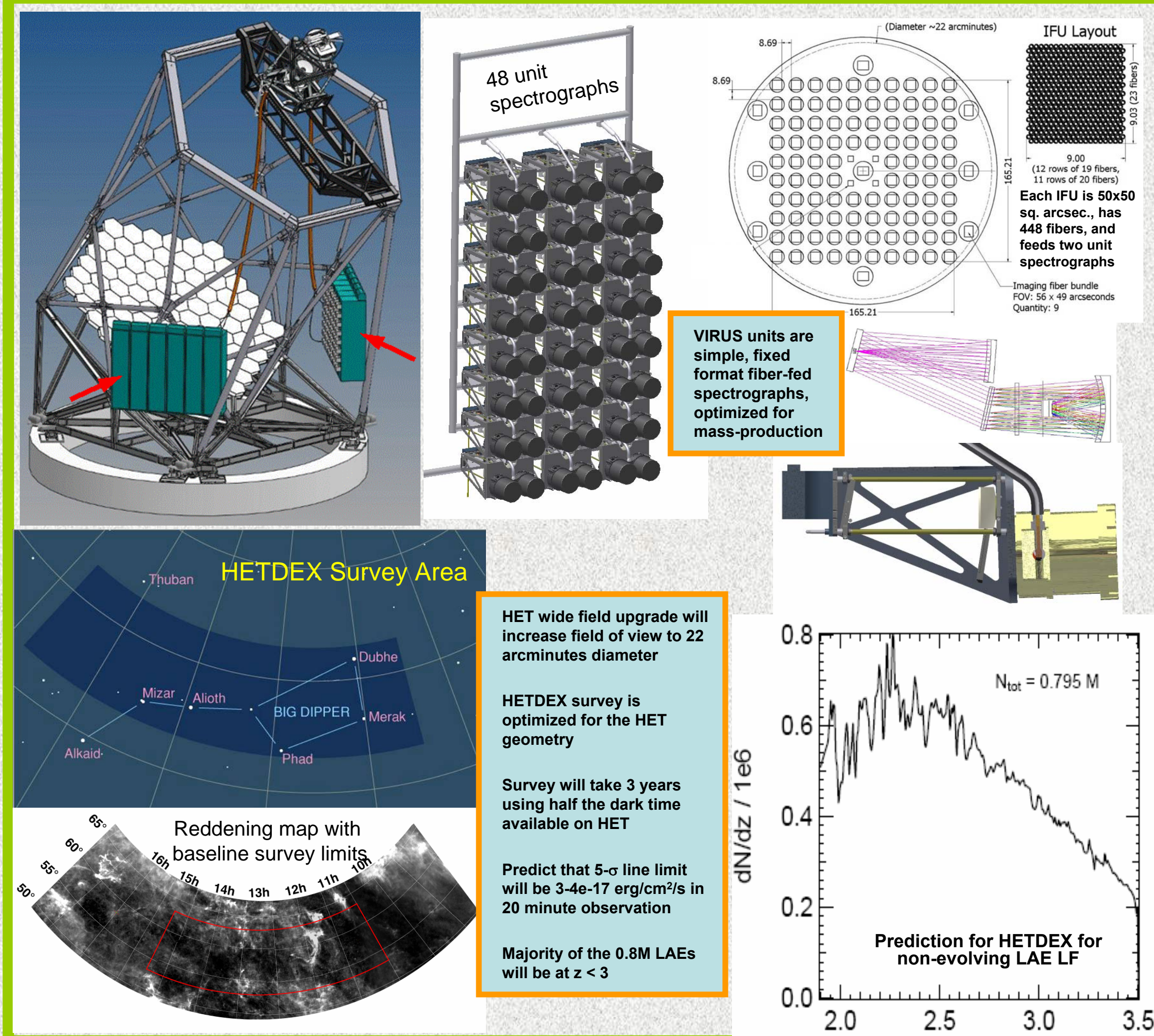
HETDEX uses baryonic acoustic oscillations and the shape of the Lyman-alpha emitting (LAE) galaxy power spectrum to constrain $H(z)$ and $D_A(z)$. The experiment will place tight constraints on possible dark energy evolution, complementing studies of the phenomenon at low redshift. HETDEX will also provide the most accurate constraint on the curvature of the Universe.



HET Wide Field Upgrade and VIRUS

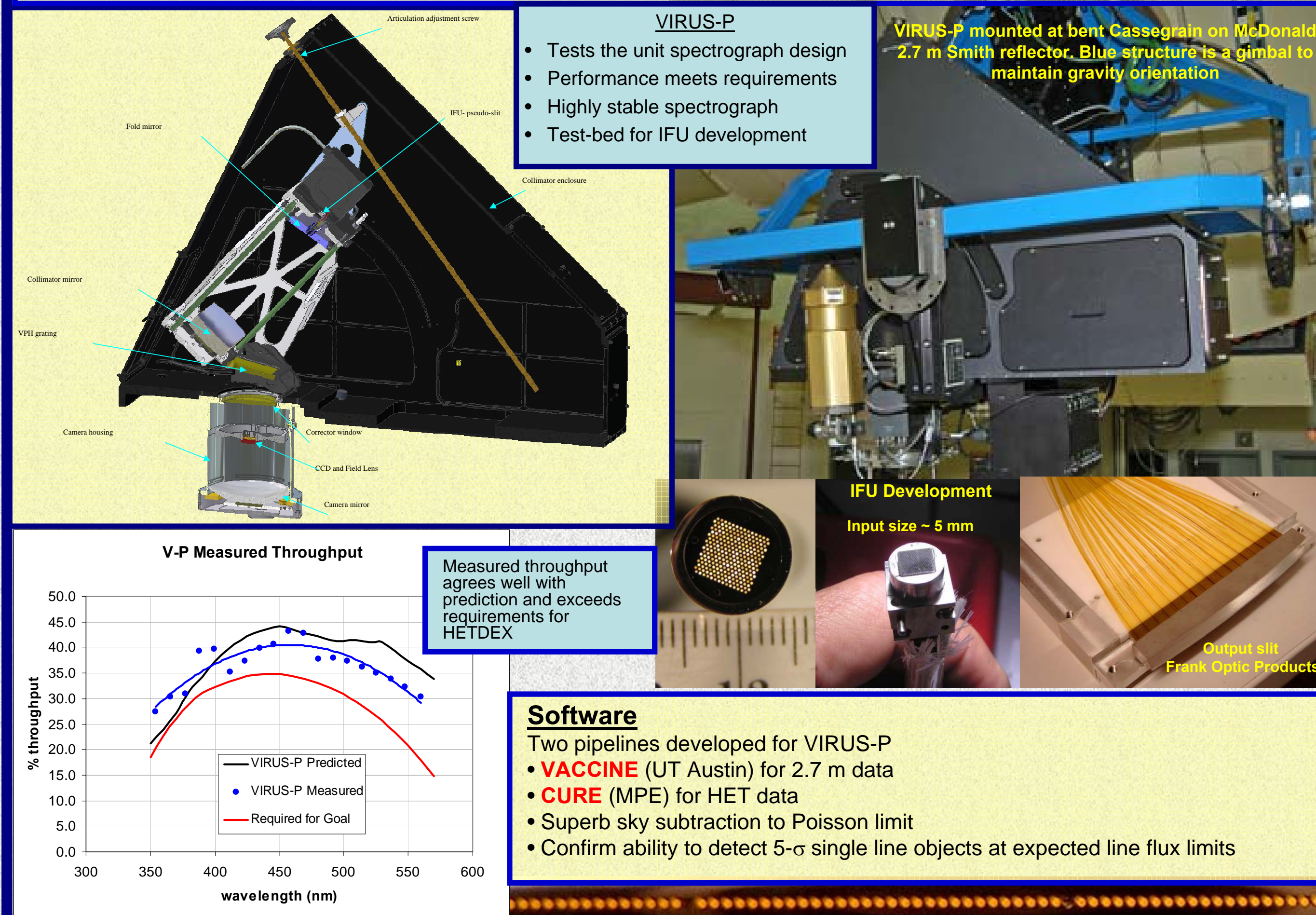
HETDEX will outfit the 10 m HET with a new wide field and an array of at least 150 integral-field spectrographs called VIRUS. Each fiber-coupled unit spectrograph will cover 350-550 nm, simultaneously at 5.7 Å resolution, providing $\sim 36,000$ spectra per exposure.

VIRUS will open up surveys of the emission-line universe for the first time. The 3-D map of 0.8 million LAE galaxies in 9 cubic Gpc volume will be used to measure the expansion history at an early epoch and place constraints on dark energy evolution.



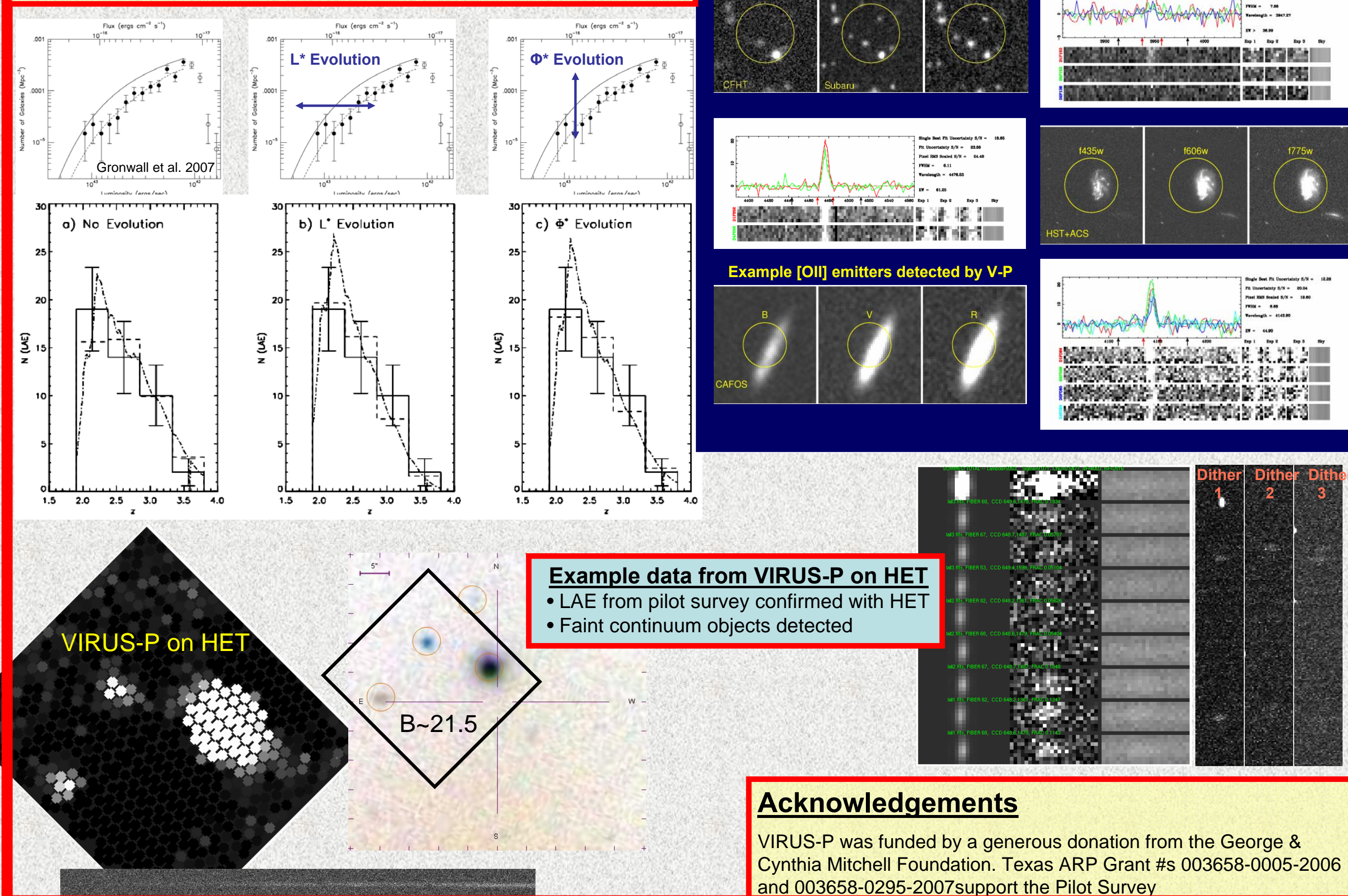
The VIRUS Prototype Unit Spectrograph (VIRUS-P)

The prototype of VIRUS is a powerful instrument in its own right. Used on the McDonald 2.7 m Smith reflector, it covers the largest area (3.5 sq. arcmin.) of any integral field spectrograph, and has coverage down to 340 nm. It is currently in use for a pilot survey to better measure the properties of LAE galaxies in support of HETDEX.



Pilot Survey

120 sq. arcmin. surveyed in MUNICS, COSMOS, GOODS-N. Preliminary results on LAE evolution from 40 sq. arcmin. in COSMOS



Acknowledgements

VIRUS-P was funded by a generous donation from the George & Cynthia Mitchell Foundation. Texas ARP Grant #s 003658-0005-2006 and 003658-0295-2007 support the Pilot Survey