

# The DEEP2 Galaxy Redshift Survey: Overview

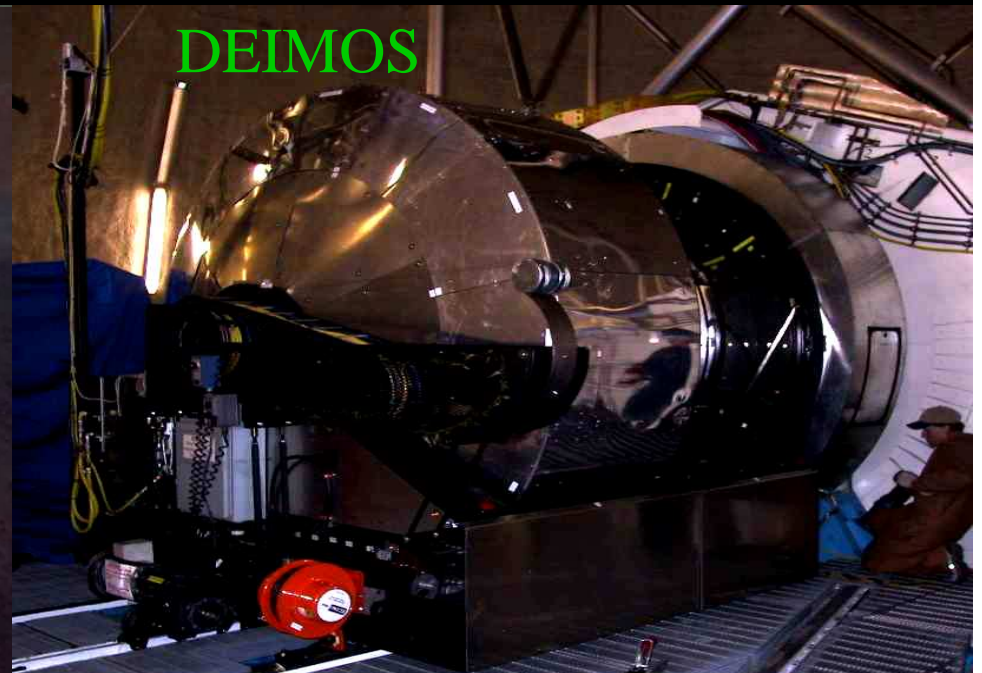
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KECK



DEIMOS



1 What is DEEP2 ?

1 What are its Scientific Goals?

1 What is its Current Status?

# The DEEP2 Collaboration

## Team Members:

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# Deep Extragalactic Evolutionary Probe (DEEP)

Redshift Surveys of  $Z \sim 1$  Galaxies using the Keck Telescope with High Spectral Resolution to Measure Internal Kinematics

**DEEP1 (1995-2001)**

**# PILOT SURVEYS**

Basis for DEEP2 Plans

3 Fields w HST Images

LRIS, ESI, HIRES, NIRSPEC

~1000  $z$  ( $I \sim 23.5$ )

30N ( $z \sim 0.2 - 3.0$ )

**DEEP2 (2002-2005)**

**(1HS) 2 SURVEYS (3HS)**

**1 Hour Survey**

4 Fields (3.5 sq.dg)

DEIMOS

**50,000 ( $R \sim 24$ )**

**90N ( $z \sim 0.7-1.4$ )**

**3 Hour Survey**

GOODS & HST

DEIMOS & LRIS-B

**5,000 ( $I \sim 24$ )**

**30N (E/S0,  $z \sim 2$ )**

DEEP1 <http://deep.ucolick.org/>

DEEP2 <http://deep.berkeley.edu/>

DEIMOS <http://www.ucolick.org/~loen/Deimos/deimos.html>

# DEEP2 Science Goals

## 1HS & 3HS: Internal Kinematics of Galaxies

**\*1HS: 50,000 Galaxies at  $z \sim 0.7-1.4$  (2x LCRS)**

**SPECTRA:  $z$ , emission & absorption line strengths & ratios**

**PHOTOMETRY: CFHT BRI, Palomar K, some HST-ACS**

### 1) Dark Matter & Galaxy Bias

**Dynamical Masses of Galaxies (Dark + Baryonic);**

**\*Large Scale Structure, Clustering Statistics, and Velocity Dispersion, & their Evolution (Comoving Vol.  $6 \times 10^6 \text{ Mpc}^3$ )**

### 2) Dark Energy & Cosmology

**\*Volume Tests of Geometry: Velocity Function**

**\*Group & Cluster Number Density & Evolution**

### 3) Galaxy Formation & Evolution

**Luminosity, Color, Star Formation Rate, Metallicity, Age, Kinematics, Stellar Mass, Morphology & Structure (HST)**

***Density Distributions ( $z$ , \*environment, galaxy properties)***

# DEEP2 STATUS

- 1) **DEIMOS is FULLY OPERATIONAL**
- 2) **DEEP2 1HS: First Light JULY 2002**  
**3HS: Not Started GOODS-N in Apr 03**
- 3) **Keck NIGHTS: 17 (10 clear) in 2002 w DEIMOS ;**  
**(41 Allocated) 18 in Sp2003 w DEIMOS**  
**6 in Sp2003 w LRIS-B (3HS)**

**REMAINING 79 NIGHTS TBD THROUGH 2005**

- 4) **REDSHIFTS: 1HS: 4,000+ (mostly  $z \sim 0.7$  to  $1.4$ )**  
**1,500+ at  $z > 1$**

**\*\*\* see Michael Cooper talk \*\*\***