

# **Science at the Palomar Schmidt using HPWREN**

**The Nearby Supernova Factory (SNfactory)**

**Near Earth Asteroid Tracking (NEAT)**

**Quasar Equatorial Survey Team (QUEST)**

HPWREN Users Meeting - Sept 11, 2003

# The Nearby Supernova Factory

DOE-NSF approved program to find and study nearby supernovae

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# Supernovae Discover Accelerating Universe

**70% of the Universe Doesn't Fit the Standard Model**

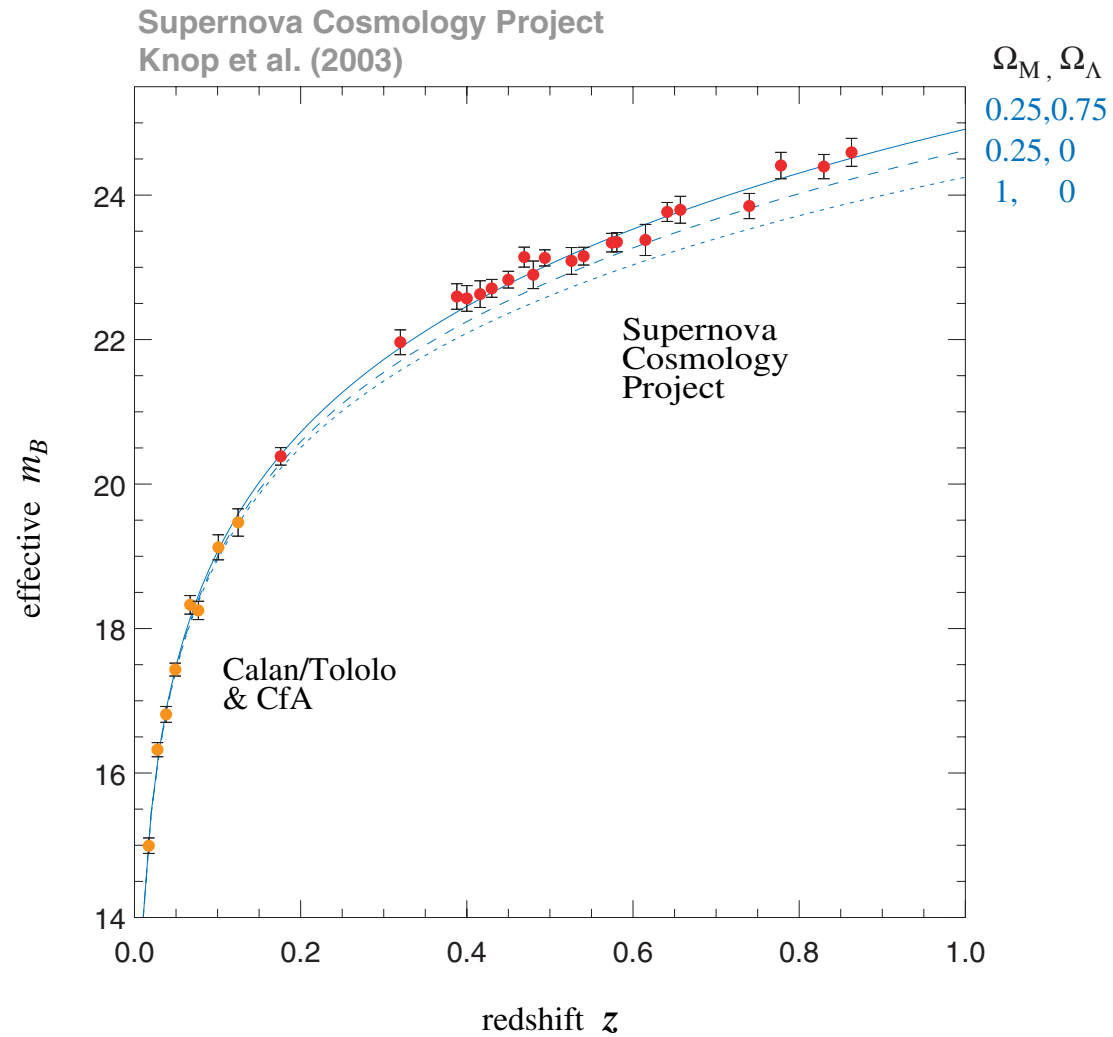
Naive estimate:  $\frac{\Lambda}{8\pi G} \sim m_{Planck}^4$  off by 120 orders of magnitude!

“This is the worst prediction in all of physics.”

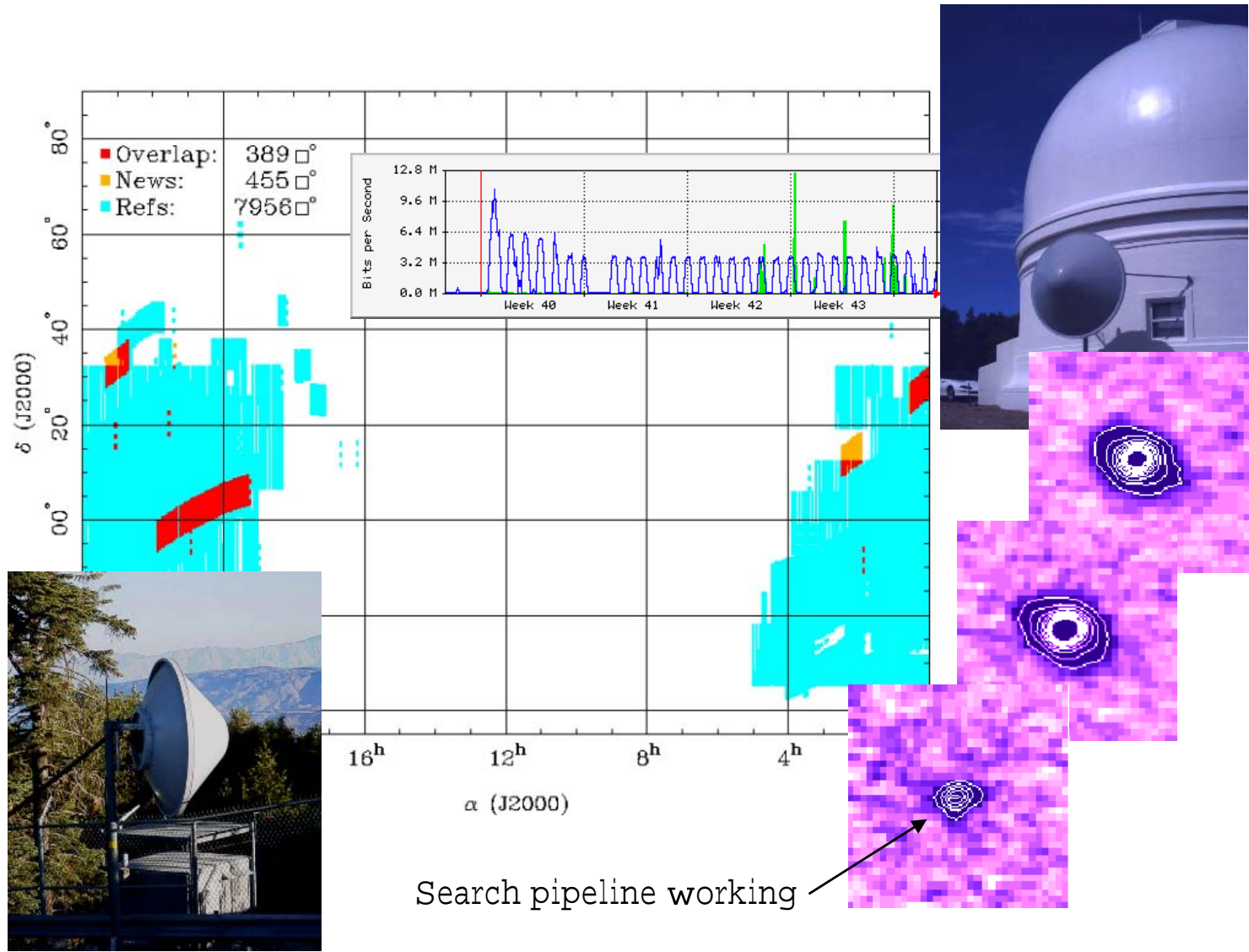
— Michael Turner

**Points to possible new physics.**

# How Can Nearby Supernovae Help?

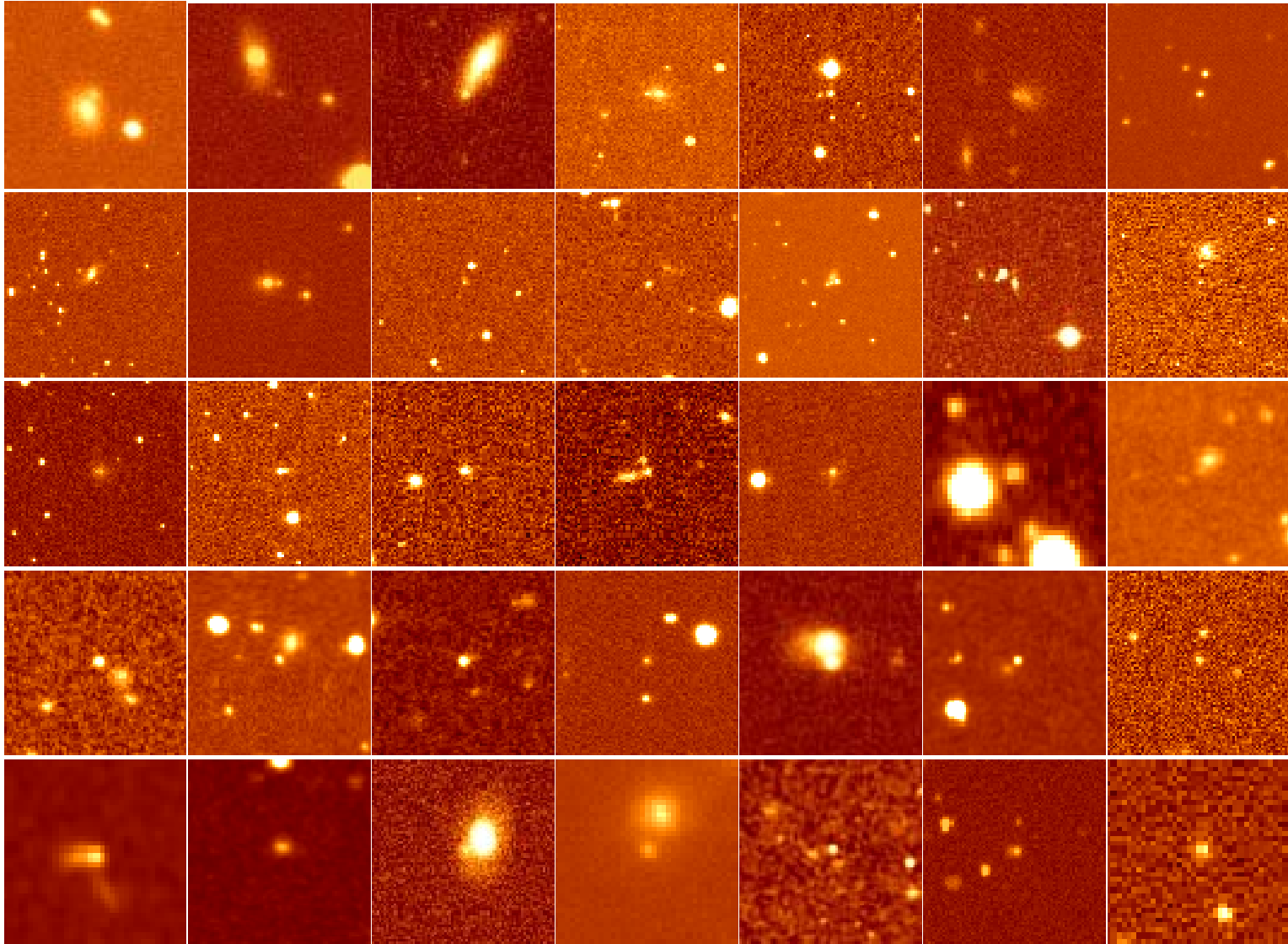


# Images Streamed to LBNL via HPWREN Wireless



in collaboration with the *High-Performance Wireless Research & Education Network* at SDSC

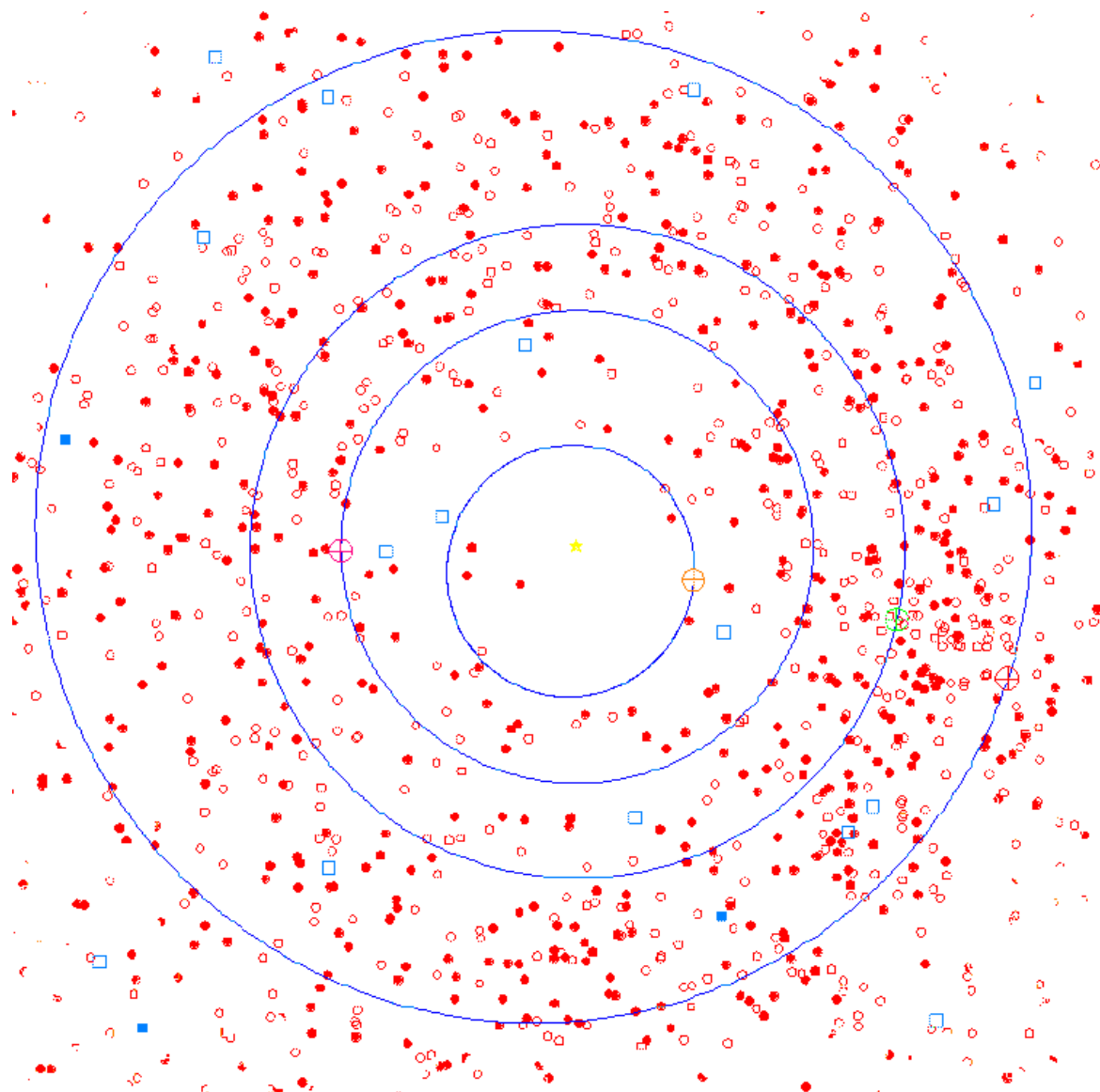
# 100 Supernovae Found So Far



# Automated Spectral Measurements from Hawaii

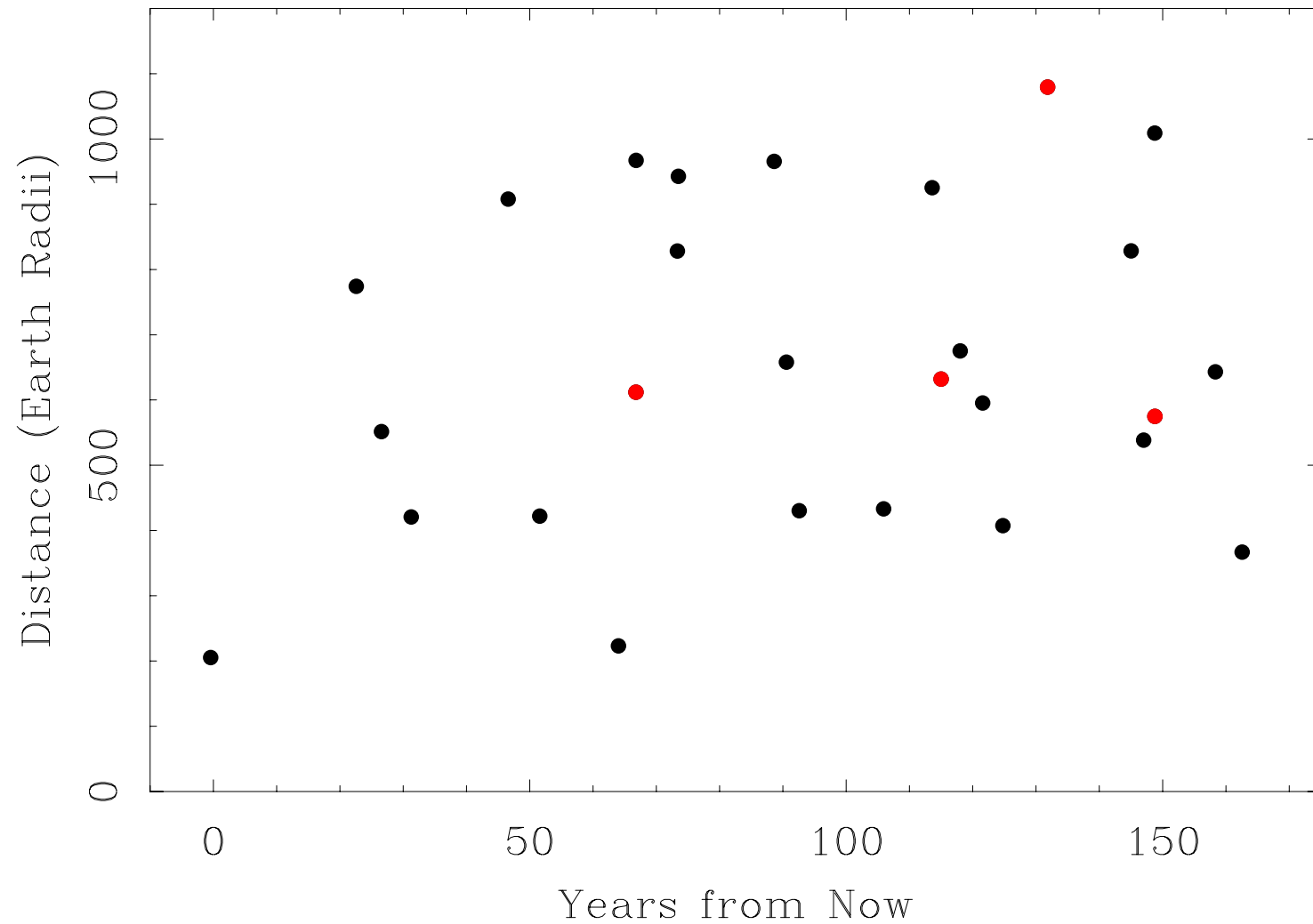


# NEAT — Catches Speeders in the Inner Solar System



# NEAT — Predicting the Close Calls

NEAT Palomar Asteroids – Close Approaches



## New QUEST Camera Now in Use

- 112 CCDs — 160 MegaPixels
- 3× more sky covered in a single shot
- Detectors reach 2× fainter
- Data rate  $\sim$  20 Mbs — could reach 30–40 Mbs

High-Speed Wireless Essential for  
Variable/Fast-Moving Celestial Objects