

# 国台学术报告 NAOC COLLOQUIUM

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**TIME: Wednesday 3:00 PM, Nov. 9, 2011**      **LOCATION: A601 NAOC**

## The GMT-CfA/Carnegie/Catolica Large Earth Finder (G-CLEF): A Versatile, Optical Echelle Spectrograph for the Giant Magellan Telescope



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Andrew Szentgyorgyi is an astrophysicist at the Harvard-Smithsonian Center for Astrophysics (CfA) specializing in optical instrumentation. Andrew completed his Ph.D. in physics at the University of Wisconsin in 1986, building an atmospheric Cherenkov telescope on Maui to search for sources of very high energy (1 TeV) gamma rays. After graduate school, he joined the Columbia University faculty, concentrating on X-ray astronomy instrumentation. Dr. Szentgyorgyi moved to CfA to work on metrology for the Chandra grazing incidence X-ray optics, but in 1993 he joined the optical and infrared instrumentation group, building a number of cameras and spectrographs for CfA ground based telescopes.

### **Abstract**

G-CLEF is a broad-band (3500Å-9500Å) fiber fed, optical echelle spectrograph that is in concept design study phase for first light at the Giant Magellan Telescope (GMT). A key scientific mission for G-CLEF is the discovery of exoearths and characterization of exoplanetary systems like the Solar System. However, G-CLEF has been designed to be a powerful engine for discovery across a broad swath of stellar astrophysics and cosmology. In addition to exoplanet science, I will discuss applications to near-field and high-Z cosmology. The most demanding application for G-CLEF, the measurement of 10 cm/sec reflex motion of a solar-type star in response to the gravitational influence of an Earth-mass planet in a 1 AU orbit, requires technology that is slightly beyond the current state of the art. I will discuss a roadmap to the required technology, especially progress with laser frequency combs.



*All are welcome! Tea, coffee, biscuits will be served at 2:45*

You are welcome to nominate speakers to Shude Mao ([shude.mao@gmail.com](mailto:shude.mao@gmail.com)), Licai Deng ([licai@bao.ac.cn](mailto:licai@bao.ac.cn)), Xuelei Chen ([xuelei@cosmology.bao.ac.cn](mailto:xuelei@cosmology.bao.ac.cn)).