

A Balloon-Borne Wide Field Telescope: The Need

- Ground based wide field optical imaging is limited to around $0.5''$ resolution by the atmosphere.
- The Hubble Space Telescope has $0.05''$ pixels, with a small (10 square arcsecond) field of view.
- Gravitational lensing measurements require wide field high resolution images.
- Space satellites are being considered.

A Balloon-Borne Wide Field Telescope: Ballooning

- At balloon float altitudes, the atmosphere does not effect resolution.
- In the late 1960's, Stratoscope II demonstrated 0.15" resolution with a 0.7m telescope.
- Super-pressure balloons will permit multi-night flights from mid latitudes (target is 100 day flights).

A Balloon-Borne Wide Field Telescope: The concept

- 1.5 m primary mirror, a 0.7 square degree field of view and 0.1" resolution
- A factor of 80 faster mapping than HST
- Telescope pointed to 1", with fast steering mirror holding the image to ~0.1"
- Capability to execute this project exists in Canada
- Would develop expertise base for an ambitious Space Telescope.

A Balloon-Borne Wide Field Telescope: Other Considerations

- Schedule: 4 years from first funding
- Collaborations: cross-Canada
- Costs: approx \$1M/year; (not yet proposed)
- Payload Mass: 1 ton class
- Altitude: 35 km
- Duration: as long as possible (100 days?)
- Student involvement: broad, cross-disciplinary.