SOAR Telescope

Dr. Loh

1. Telescope in Chile – why the southern hemisphere? Can see objects/galaxies that can only be seen in the southern hemisphere.
2. 3 Mirror Optical Path – steers light to several instruments to be evaluated
3. Primary Mirror is 14 foot diameter and 4 inches thick; can’t go thicker or hard to control temperature changes of mirror quick enough
4. Mirror is a reflecting mirror which must maintain its shape to fraction of wavelength = 0.000001 and uses mechanical “fingers” to push on it to keep its shape
5. What can you learn from the light?
6. Temperature - spectrograph
7. Composition from spectrum - spectrograph
8. Speed due to Doppler Effect
9. Need a camera and spectrograph for visible light and infrared.
10. Dr. Loh studying Molecular Hydrogen(2 hydrogens bonded together)
11. Molecular hydrogen vibrates and rotates and due to this emits photons of light when the transition is made; it vibrates/transitions and emits or absorbs light in infrared region.
12. Why Study Molecular Hydrogen? Hydrogen can be in ionized atomic, and molecular forms and it is the most common element in the universe.
13. Experiment – look at molecular hydrogen in Crab Nebula and Supernova
14. Uses two filters to look for Molecular Hydrogen – one allows light to pass due to hydrogen and other does not. Look at difference between these to two to determine presence and energy.