Earth Sciences Summer Student Program：astronomy

The diffraction-limited speckle masking observations for selected binaries

Supervisor: Hsieh-Hai Fu

Project description:

The speckle-masking method is the one of image reconstructions, and can get image of binary system, not only the information of relative positions between the primary and secondary with the speckle Interferometric method.

The turbulent atmosphere of the Earth limits the resolutions of telescope about 1 arc sec, and speckle interferometric method in optical observation can reach the diffraction-limited, get the information angular separation and position angle. The speckle interferometric method for binary program is almost routing work at our team of NTNU, and it is good time to set up the technology for image reconstruction.

Speckle-masking is a correlation of third order, and the data of raw images of binary can be used to reconstruct the original image. The program will be done as following:

- Observing few suitable binary with speckle interferometric technology

- Finding the relative position between the primary and the secondary with FFT skill

- Using the information get from FFT skill as a masking

- Processing the speckle-masking program to reconstruct the image

Preferred background of student candidates:

- Senior students interesting with astronomy

- The experience in IRAF and programming skills in IDL