Provisional program
of the 2008 Beijing Spring School
on astrometry

The lessons will be given at Beijing planetarium; the night observations will be made in Beijing (Monday, Tuesday), and in Xinglong station (Wednesday, Thursday).

1. *Fundamental astrometry (8h)*

- the celestial sphere, the coordinates
- definition of a measurement on the celestial sphere, absolute, relative or direct measurement;
- the different observations on the celestial sphere: CCD, photographic plates (long focus, Schmidt plates), meridian transit circle, scanning telescope
- the focal plane observations, the gnomonic projection,

- the methods for the reduction;
- the least squares method
- the astrometric reduction of optical ground based observations biases from telescopes, from the sky;
- the link method, the star catalogues;
- the refraction
- the methods of reduction without reference stars.

2. *Receptors, telescopes and images (4h)*

- the making of the images, the diffraction, the atmospheric effects, PSF, centroiding
- the electro magnetic signal, the optical wave lengths;
- the astrometric and photometric receptors, the CCD, the reduction of a CCD image;
- the CCD in TDI mode, the scanning telescopes;
- the scanning of photographic plates;
- the objects to be observed, planets, inner satellites, outer satellites, large objects, asteroids, bright primary, fast objects, comets
- the possible astrometric accuracy depending on the observed objects˙

3. *Astrometry through photometry (6h)*

- the astrometric observation without an angular measure, elements of photometry;
- the mutual occultations and eclipses, the occurrence during the planetary equinoxes;
- the observation and reduction of the mutual events;
- the preparation of the observational campaigns in 2009-2010.

- the case of non punctual objects : the solar system bodies ; the reflection laws on the surface of the bodies, the centre of mass and the photocenter;
- the phase defect, the albedo;

- the analysis of the photometric light curves; the inversion

- the occultations (occultations by the Moon, occultations of stars);

4. *Astrometry of the future (2h)*

- the future astrometry with GAIA, the observations to be made before, during and after the GAIA mission

5. *Practical astrometry at night (24h)*

- CCD observation;
- the astrometric and the photometric reduction;
- observation of different objects: asteroids, inner and outer natural planetary satellites;
- the reduction