

## Teaching Notes for Exploring the Sun

### Equipment TA needs:

#### FOR SOLAR TELESCOPE MEASUREMENTS

- Solar telescope and projection screen
- Cardboard Mask
- Colored pencils

#### FOR INDOOR MEASUREMENTS

- Compasses
- Rulers

In order to aim the telescope use the shadow of the telescope in order to determine where the Sun is. When you have it almost centered, you will see the Sun.

Remind the students and keep in mind at all times that we are projecting the Sun to provide a safe method of examining the Sun. However, the observations still use the direct light of the Sun and near the eyepiece it can be dangerously hot.

A fairly useful site for a lot of this information and other solar information is:

<http://sohowww.nascom.nasa.gov/>

Remember you need to have the students make the observations of the Sun before they come to class. They will need to make 2 separate observations, 2-4 days apart. This means that these solar observing times need to be scheduled in advance.

One or two eyepieces should be dedicated to this lab as the eyepieces will heat up and some damage can occur. Point the telescope away from the Sun when not in use.

In order to determine sidereal period from a synodic rotation period, one can do this in two ways. One can either fix the periods or the distances the objects moved. If you use periods, you take the synodic period and determine what fraction of the Earth's orbital period that is. Then remove that fraction out of the synodic period. You can also determine how many degrees around the orbit the earth moved during the observation and subtract that number from your observations.

This lab can only really be done near solar maximum as sunspots are too rare at minimum.

For the CME part, have the size of the Sun handy: diameter =  $6.96 \times 10^8$  m.