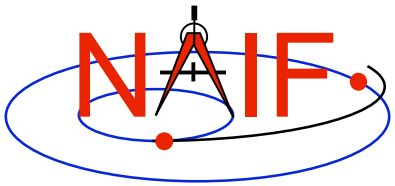
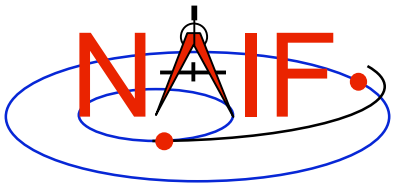


Navigation and Ancillary Information Facility

Geometric Event Finding
Programming Lesson

October 2004



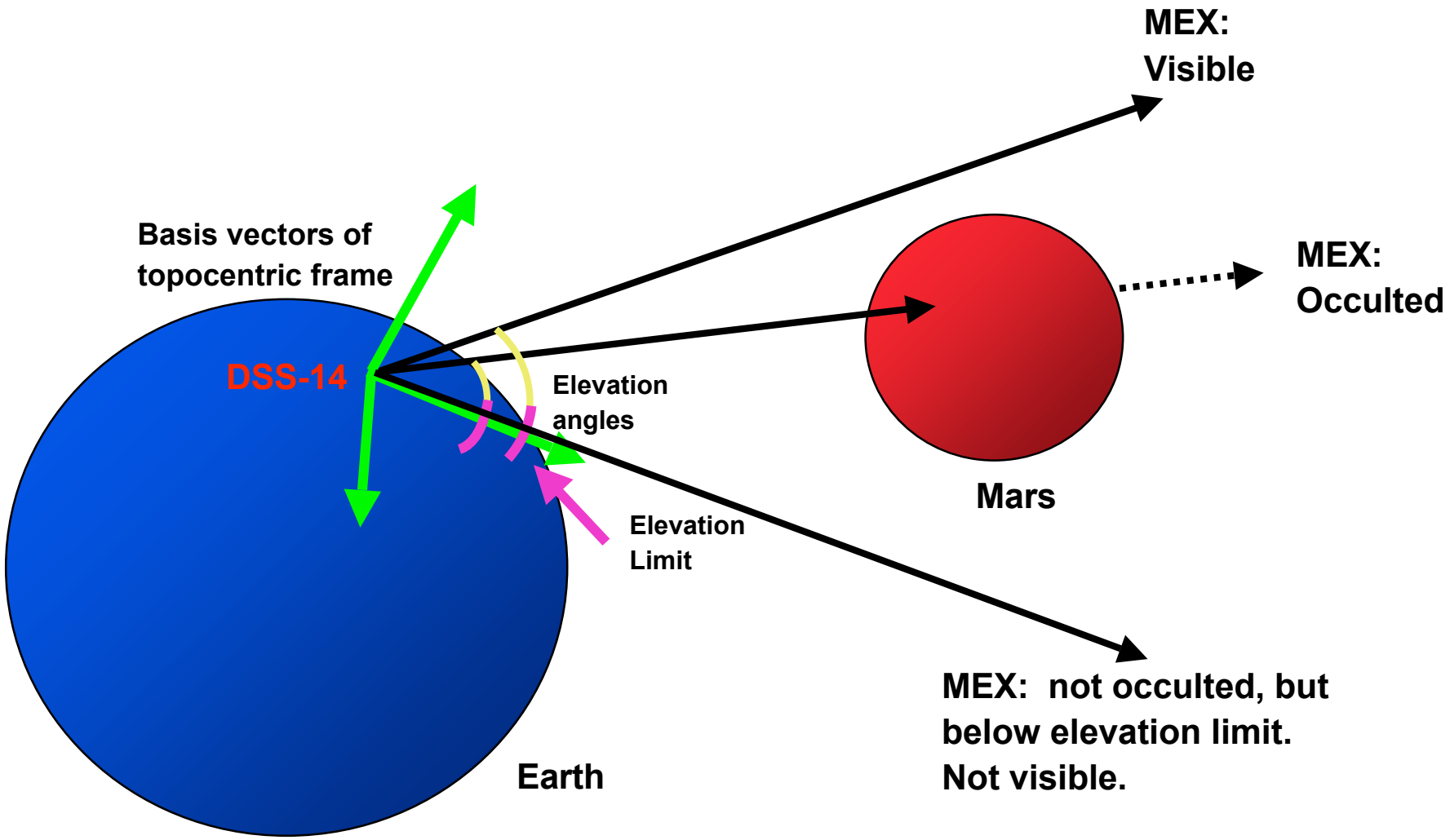
Geometric Event Finding: Overview

- **Problem statement:**
  - Write a program that determines when a point target is visible, as seen from a surface point on an extended body.
    - » Assume that a second extended body may occult the target.
    - » Account for the possibility that the body on which the surface point is located may occult the target.
  - Concrete application:
    - » Within the time interval

      2004 May 1 TDB

      2004 May 5 TDB

      determine when the Mars Express orbiter is visible from the DSN station DSS-14.
    - » Account for possible occultation by the earth or by Mars.
    - » Produce a SPICE window representing the visibility period.

Visibility Geometry

Navigation and Ancillary Information Facility