DDA 2008 POSTER PRESENTATION:

Predicting Iridium Flares

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See http://home.att.net/~sky_watcher/ for Iridium flare predictions for Boulder, Colorado during the dates of this 39th Division on Dynamical Astronomy (DDA) Meeting, April 28 - May 1, 2008.

Figure 1. Iridium Satellite (see next panel)

Check out:

(a) spacecraft body's long axis,
(b) configuration and orientation of the three Main Mission Antennas (MMAs).

The Iridium Satellite Control Law is

"Long axis down, MMA #1 forward."

This law determines the orientation in space of each MMA at all times.

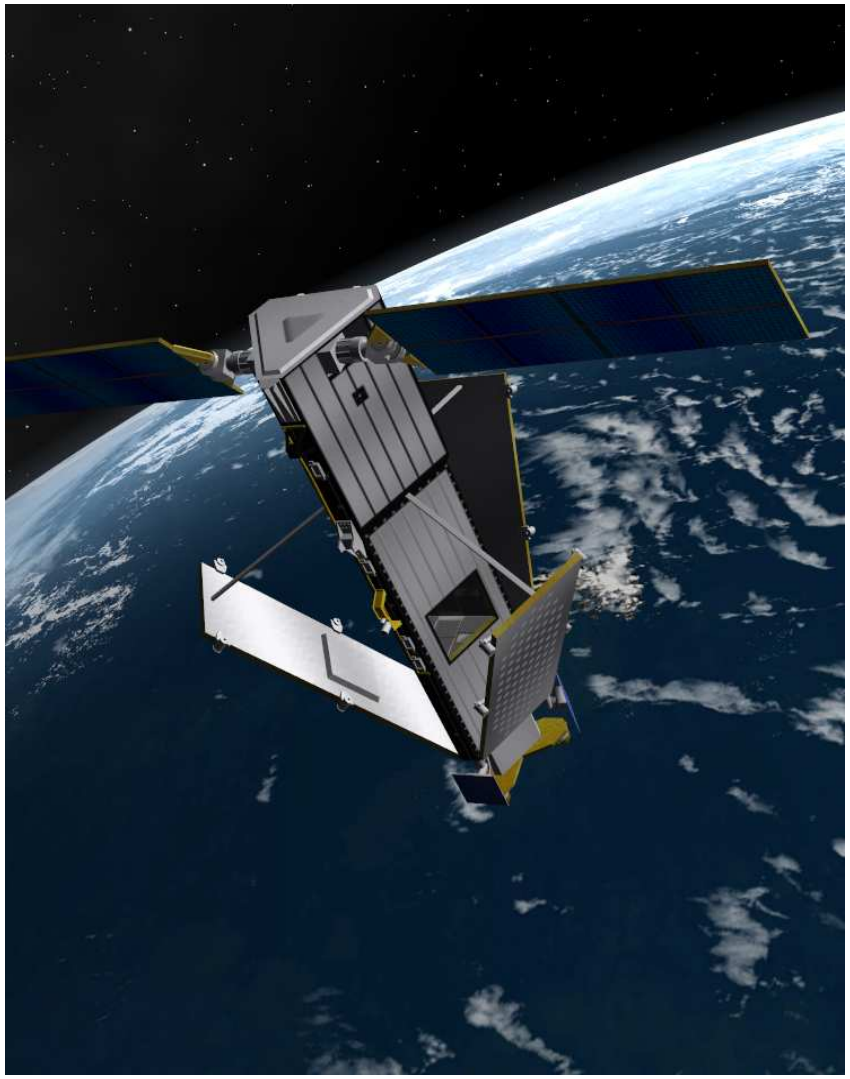

Figure 1. Iridium Satellite On Orbit
3D Model by Richard S. Wright, Jr., Courtesy of Software Bisque, Inc.

Figure 2. Sun-Mirror-Observer Relationships (see next panel)

Any given observer sees an Iridium flare when he or she can see the Sun reflected through one of the three MMAs.

The mirror angle, η , is the angle between the Sun and the point on the celestial sphere that the observer can see through an MMA "mirror."

Note that angle η has its vertex at the satellite.

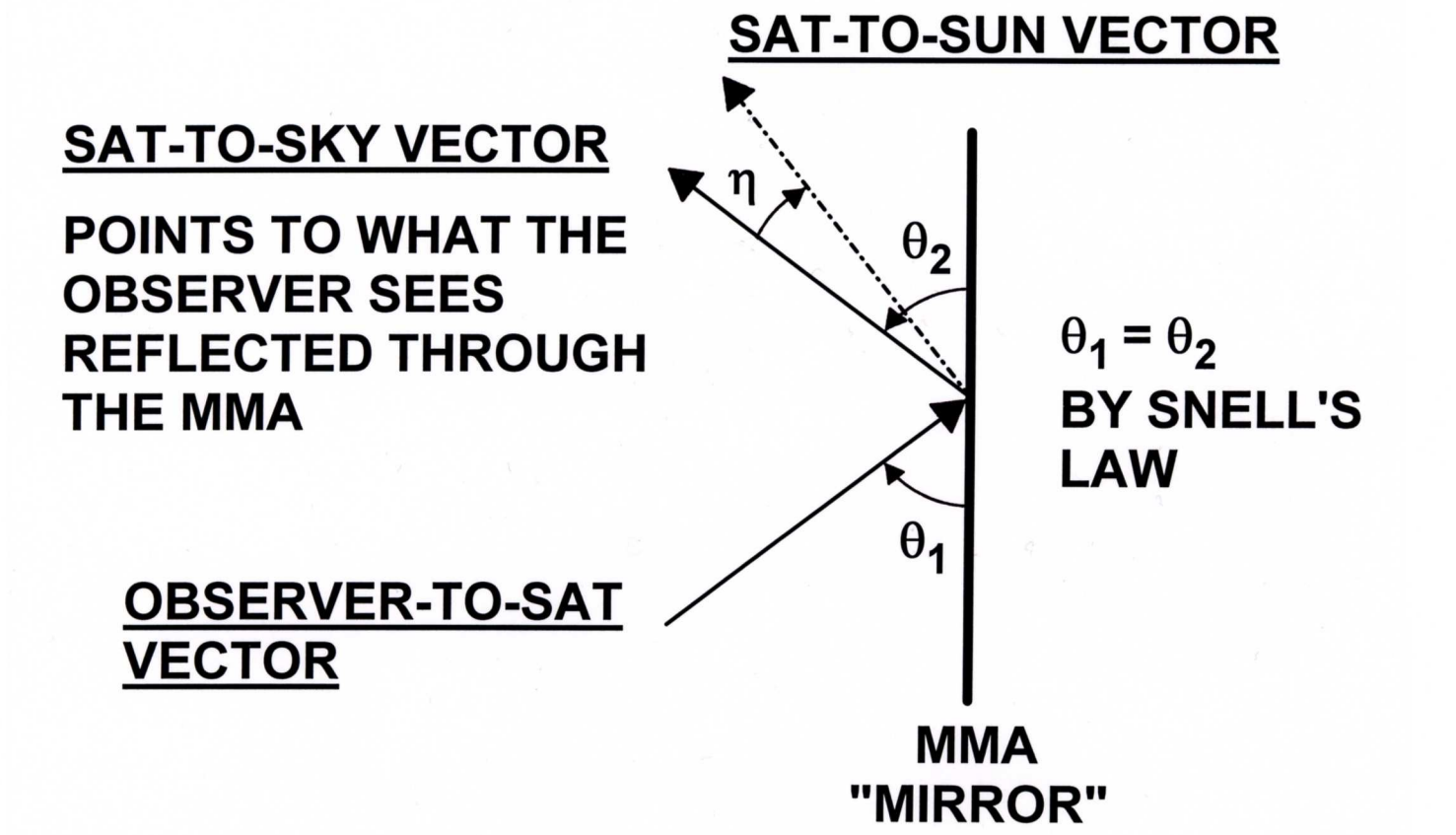

Figure 2. Sun-Mirror-Observer Relationships

Figure 3. An Iridium flare, as simulated by Software Bisque's *TheSkyX* program (see next panel)

Note 1. My Iridium flare prediction program is called *Firebirds* and is coded in C++. Software Bisque has incorporated *Firebirds* into *TheSkyX*.

***TheSkyX* can now predict Iridium flares and simulate them via highly realistic animations.**

Note 2. If circumstances permit, I will run *TheSkyX* on a laptop computer during my poster presentation. I will thereby demonstrate how *TheSkyX* simulates and animates Iridium flares.

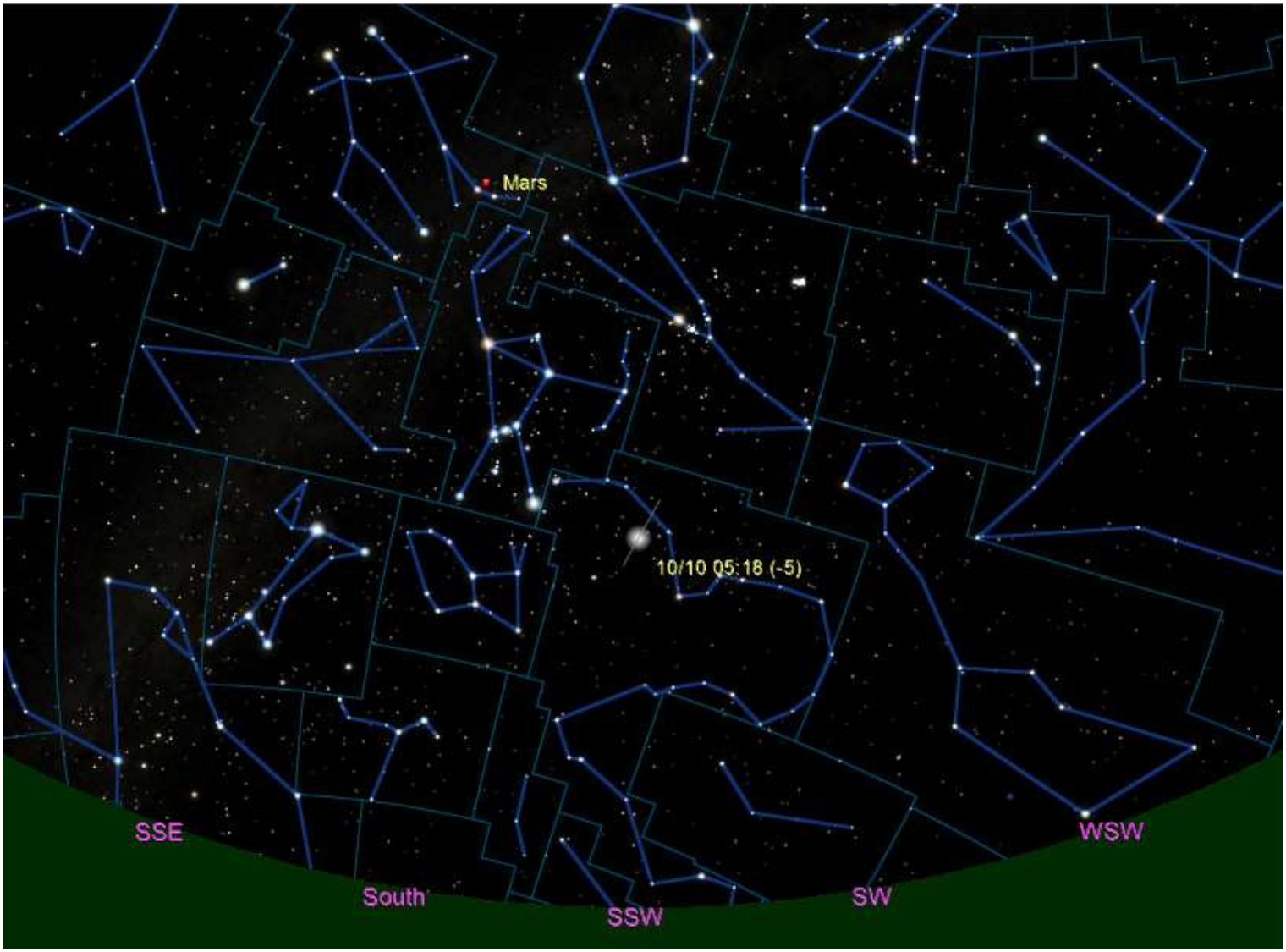

Figure 3. An Iridium Flare as Simulated by *TheSkyX*

Note 3. Current orbital elements for all Iridium satellites are needed at least weekly from the U.S. Air Force's Spacetrack website at http://www.space-track.org.

T.S. Kelso's Celestrak website at http://celestrak.com obtains the orbital elements from Spacetrack and adds the operational status of each Iridium satellite (active [+], inactive [-], or spare [S]).

Operational status is important to know, because if an Iridium satellite is inactive, then its orbital attitude will no longer adhere to the "long axis down, MMA# 1 forward" control law.

Note 4. You can also obtain Iridium flare predictions from Chris Peat's *Heavens Above* website at http://www.heavens-above.com.

But with *TheSkyX*, you are doing the predictions yourself, and have greater control of the process.

Using *TheSkyX*, you can perform a highly realistic, animated simulation of the flare, for yourself or for a group, as I am doing today at this 39th DDA Meeting.