



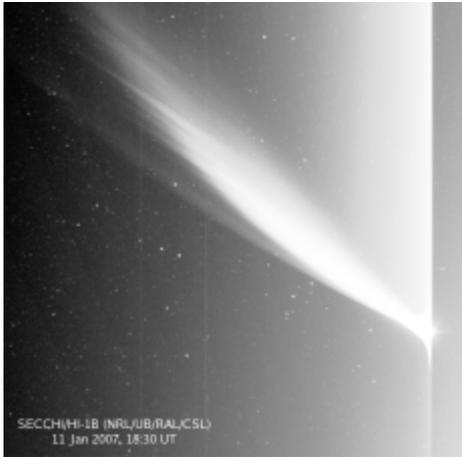
Witnesses to a Cosmic Collision: A Unique Comet-CME Encounter

Angelos Vourlidas

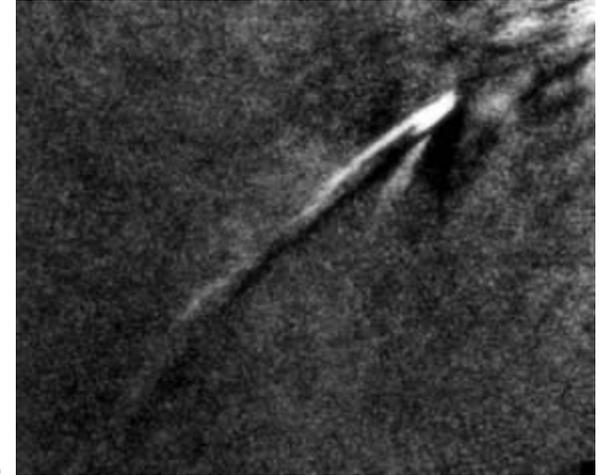
NRL

The Serendipitous Heliospheric Imager

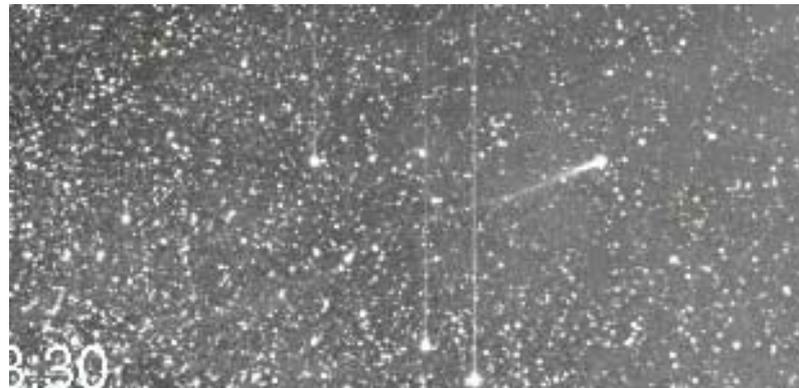
Comets Galore in the first year of HI operation



Jan 07: C/2006 P1 McNaught

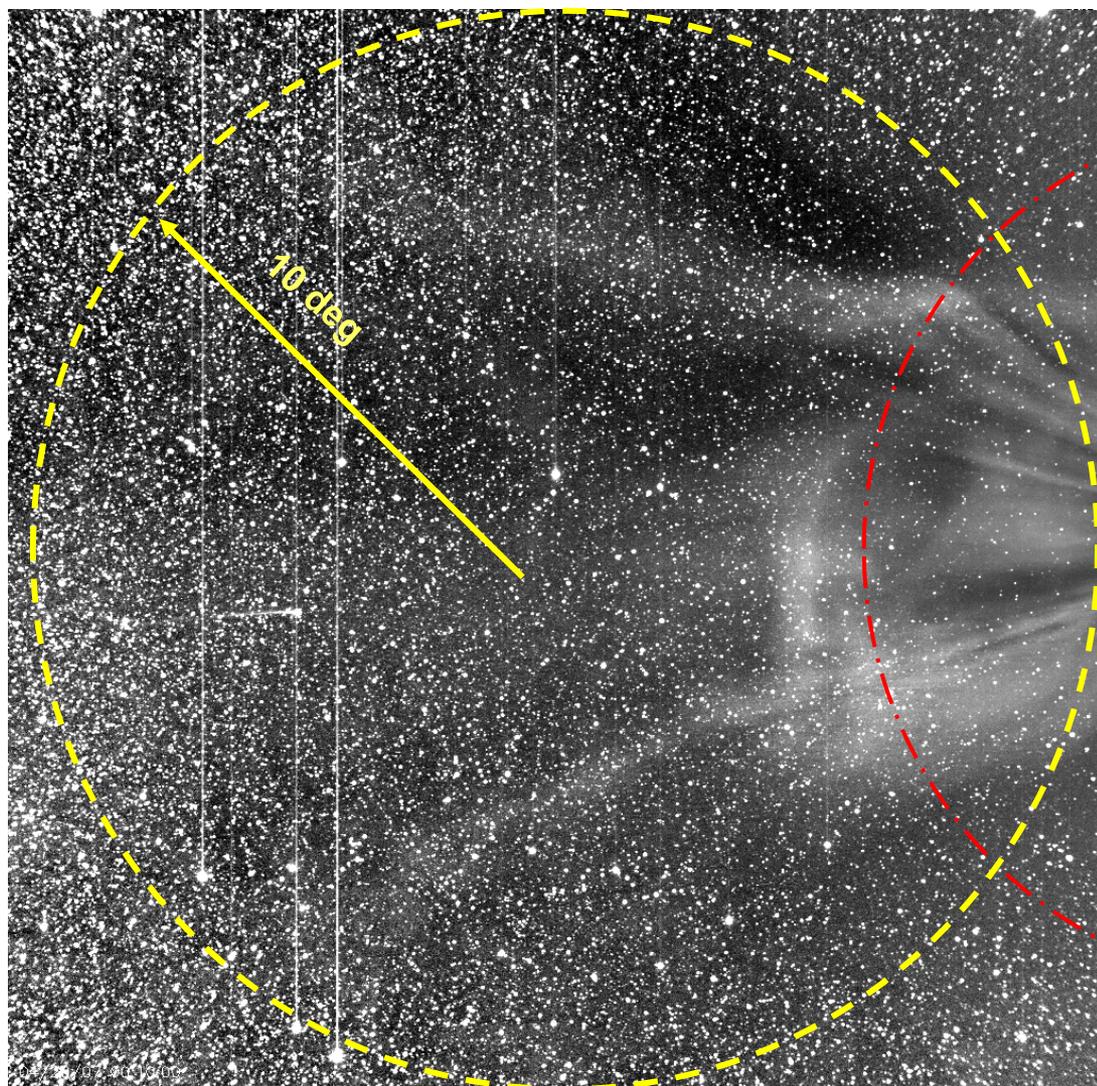


April 07: 96P/Machholz



April 07: 2P/Encke

And then a CME came along...



LASCO C3
Field of View

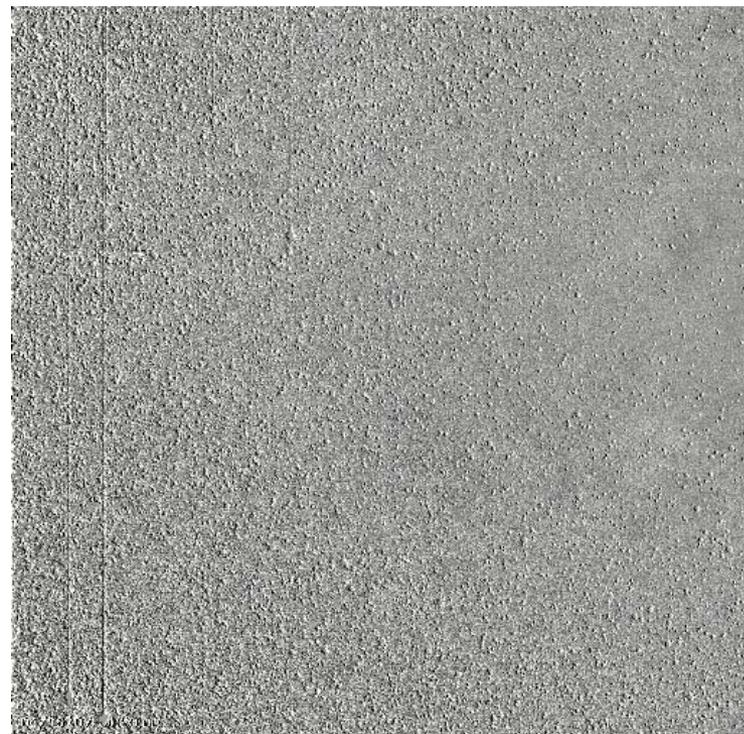
95 Rs

15 Rs

CME Interaction with Comet 2P/Encke



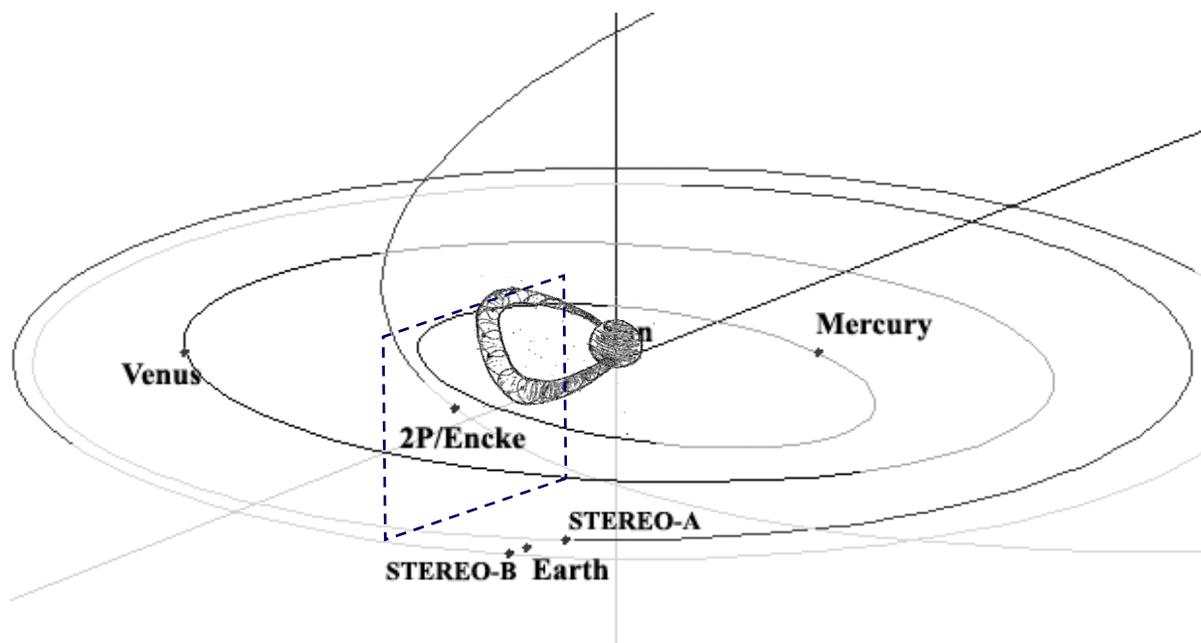
Raw images (F-corona removed)



Running Difference movie

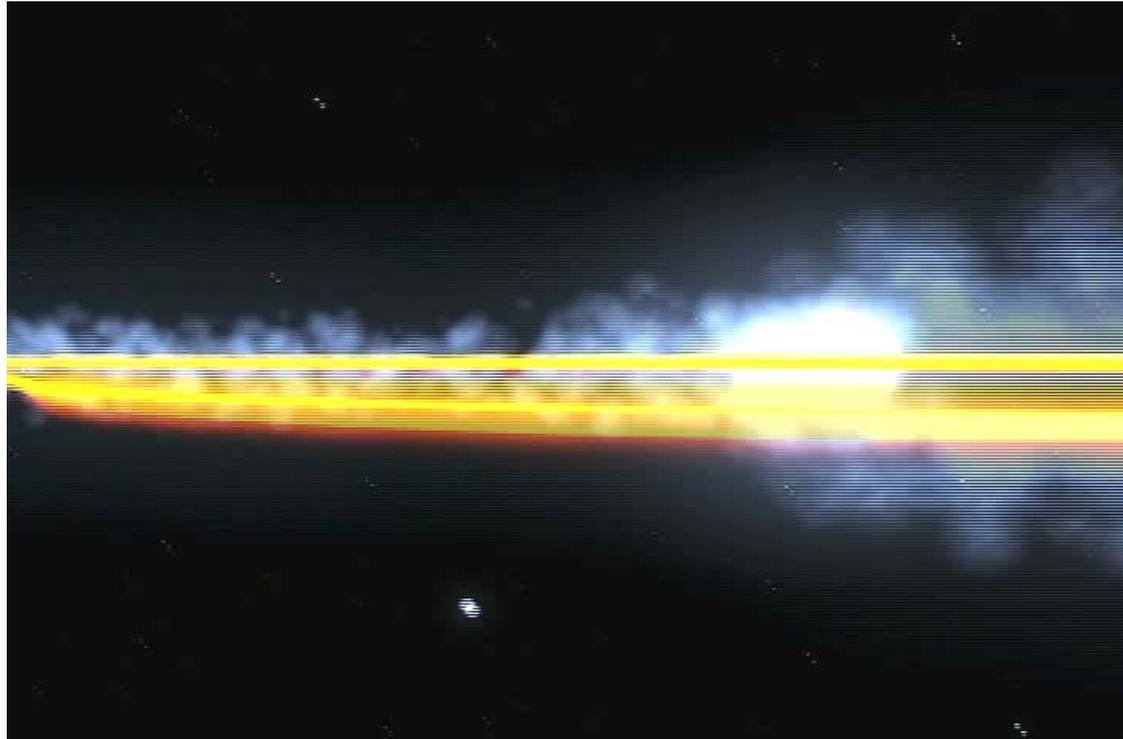
Who's to blame for the tail disconnection?

- From the HI observations:
 - CME is a fluxrope CME
 - Disconnection happens after the passage of the CME front
 - Disconnection is **abrupt** (< 45 min)
 - CME is propagating at local solar wind speed (500 km/s). Ram pressure **too low**.



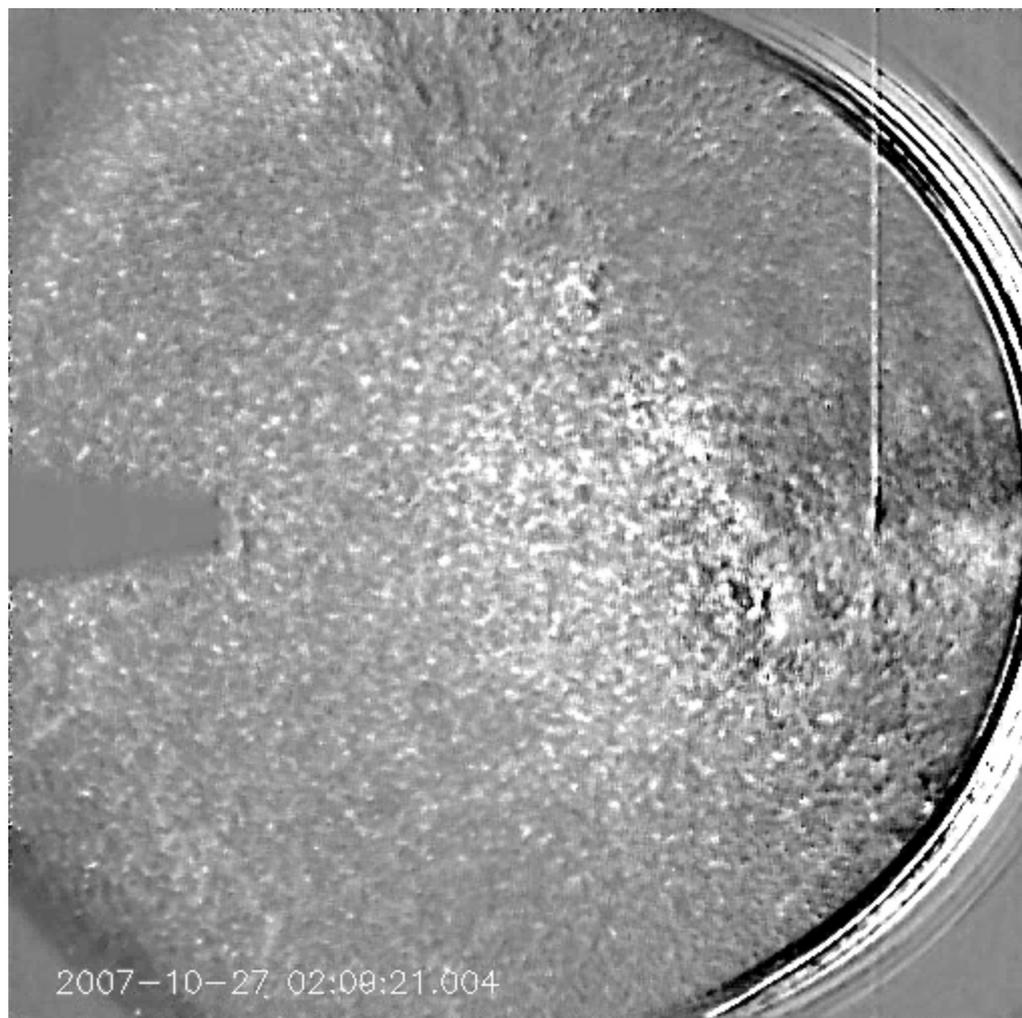
Interpretation of the Tail Disconnection

- **Magnetic reconnection must be the agent:**
 - **Tail-side reconnection is the best candidate**



But the surprises continue...

Maybe solar wind-driven tail disconnections are not rare



C/2007 F1 (LONEOS)

STEREO SWG Meeting, 7

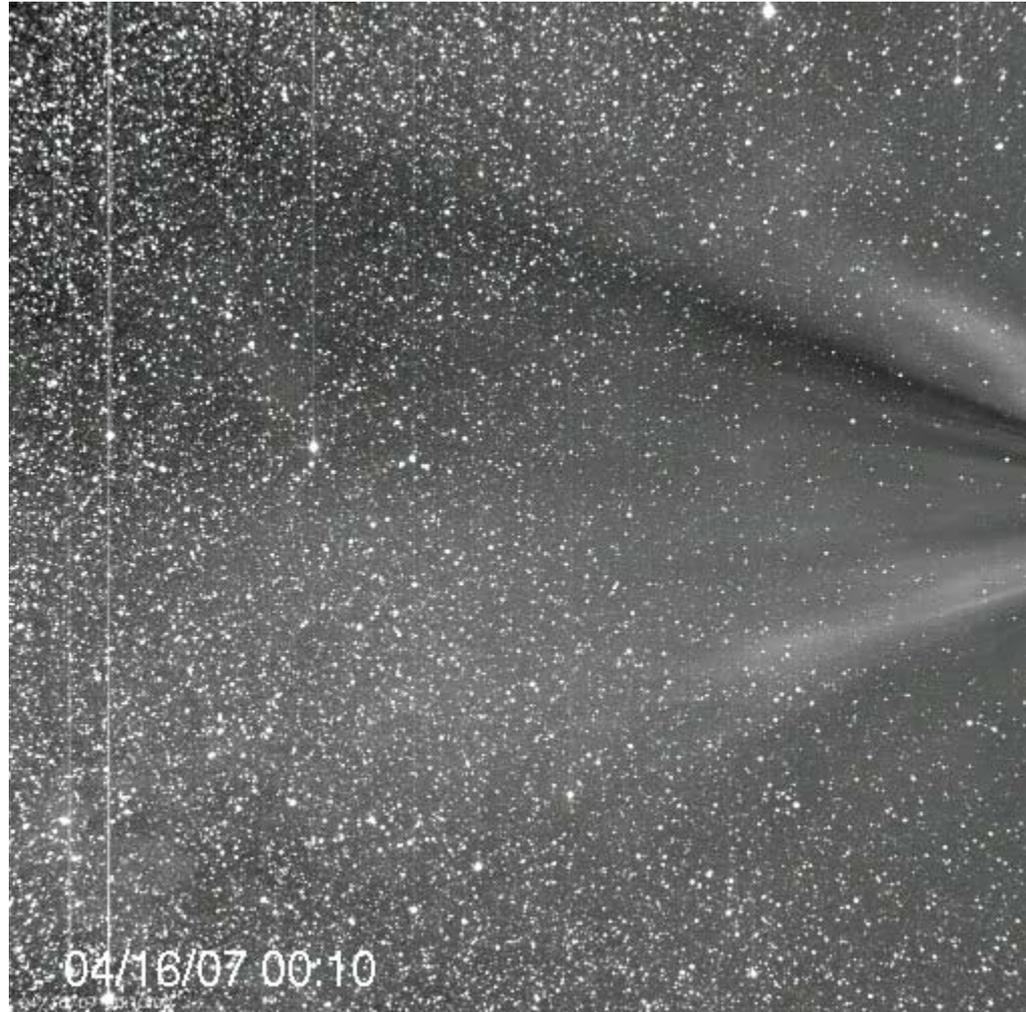


Backup Slides

The Solar Wind and the Comet

$\varepsilon = 24^\circ$

$\varepsilon = 4^\circ$



Comet 2P/Encke in HI1-A from April 16-27, 2007



**Approximate
location of Sun
(not to scale!)**