First meeting: Coronal Magnetism ISSI team
February 25 - March 1 2013

Presentations

- Available at http://www.issibern.ch/teams/coronalmagnet/firstmeeting.html

VLA/CoMP/Hinode/(SolarC?) observing run in April

- **Tim/Sarah/Steve/Alphonse/(Jeff?) -** maybe also **Terry/Don S/Kathy** for analysis depending on Hinode data

Expansions/applications of FORWARD

- DONE! Added green line to FORWARD
  - set instrument='greencomp'

- Add radio to FORWARD
  - free/free and gyro - **Tim** will send function to **Sarah**, who will incorporate them in FORWARD tree (see below for more details)
  - apply to VLA/CoMP/Hinode/(SolarC) observing run
  - other diagnostics (e.g. ray-tracing) **Tim/Stephen/Christophe**

- Add other permitted EUV lines
  - **Silvano and Alessandro** will write function as described below
  - **Sarah** will incorporate in FORWARD

- Add visible lines (e.g. 10830)
  - **Nour** will write function as described below
  - **Sarah** will incorporate in FORWARD

- Add and analyze new models/simulations **Mei/Sarah/Urszula**

- compare PFSS, magnetofrictional, and MHD to CoMP and SolarC data (LoI and direction) **Cooper/Laurel/Jeff**

- flexibility/clarification on which spectral model should be used **Terry/Kathy/Cooper**

- FORWARD widgetization (**Sarah/Blake** - should be done by summer)

- FORWARD solarsoft package (**Sarah/Blake** - should be done by fall)
  - ideally, replace FORTRAN CoMP code with IDL (**Phil/Roberto**)

- Instrument personality profiles -- e.g. CoMP/COSMO (**Steve**) SolarC/DL-NIRSP (**Jeff**), ...

Coronal Magnetism Advocacy: what we can do

- General goal: grow a broad user base
    - train generation that will use future telescopes
    - connect to coronal observer user base, as well as spectropolarimetric

- General outreach methods
    - email exploder
    - bibliography attached to ISSI web page

- FORWARD analysis tools
    - target multiple user levels (including “gateway”)
    - data products like forward-modeled PFSS/MHD/magnetofrictional
    - REU type project development
    - sit-down/hands-on workshop to train new FORWARD users

- White paper/letter
    - content
        - science objectives -- why we want to know coronal B
        - assets, current and future - emphasize complementarities
            - ATST, COSMO, CSRH, FASR, SIGMA, SOLARC
        - how we would put these together to obtain coronal B
            - FORWARD (tomography? forward-fitting?)
    - audience
        - NASA, ESA, JAXA
        - NSF (Coronal magnetism program?)
        - SPD, CSSP
        - NSO, HAO/NCAR
        - ISSI directors, COST
    - why us?
        - harmonic convergence of broad set of stake-holders
        - would be good to get more community input

- Meetings, workshops - upcoming opportunities

    - AGU May 2013 (poster on FORWARD)
    - IAU prominence meeting June 2013 (presentations)
    - SHINE June 2013 (session?)
    - SPD July 2013 (?)
    - SPIE August 2013 (?)
    - SPW September 2013 (presentations?)
    - AGU December 2013 (session?)
    - Hinode November 2013 (?)
    - ISSI workshop/textbook -- propose after next team meeting
    - COST/HAO - Coronal Magnetism workshop series?

To add an observable, you need to create an IDL function as follows (example for emissivity):

FUNCTION to calculate emissivity along the LOS

INPUTS TO FUNCTION (provided by FORWARD - generally two-dimensional, LOS vs POS)

r3d
theta3d
phi3d
(spherical coordinates, central meridian at phi = 0)
Brobs
Bthetaobs
Bphiobs
Velr
Veltheta
Velphi
Dens
Temp

FUNCTION SHOULD RETURN

emissivity (three-dimensional, LOS vs POS vs 4 (Stokes vector))

Comments:

*Radio works very much as emissivity -- but, my expectation will be that Radio will send back two-dimensional arrays (LOS vs POS) having done the integral, but emissivity will not.

*In order to test your function, you can use a datacube generated e.g. as follows (verbose forces the dump of data):

For emissivity off-limb:

for_drive,'giblow',instrument='euvia',line='195',xxmin=0.8,xxmax=1.6,yymin=.5,yymax=.5,losuse='XLos',out=1,memory=0,ngrid=64,/verbose

For radio -- including disk:

for_drive,'giblow',instrument='euvia',line='195',xxmin=0.8,xxmax=1.6,yymin=.5,yymax=.5,losuse='XLos',out=1,memory=0,ngrid=64,/verbose

This will generate an IDL save file called "datadump" with the INPUT variables.