

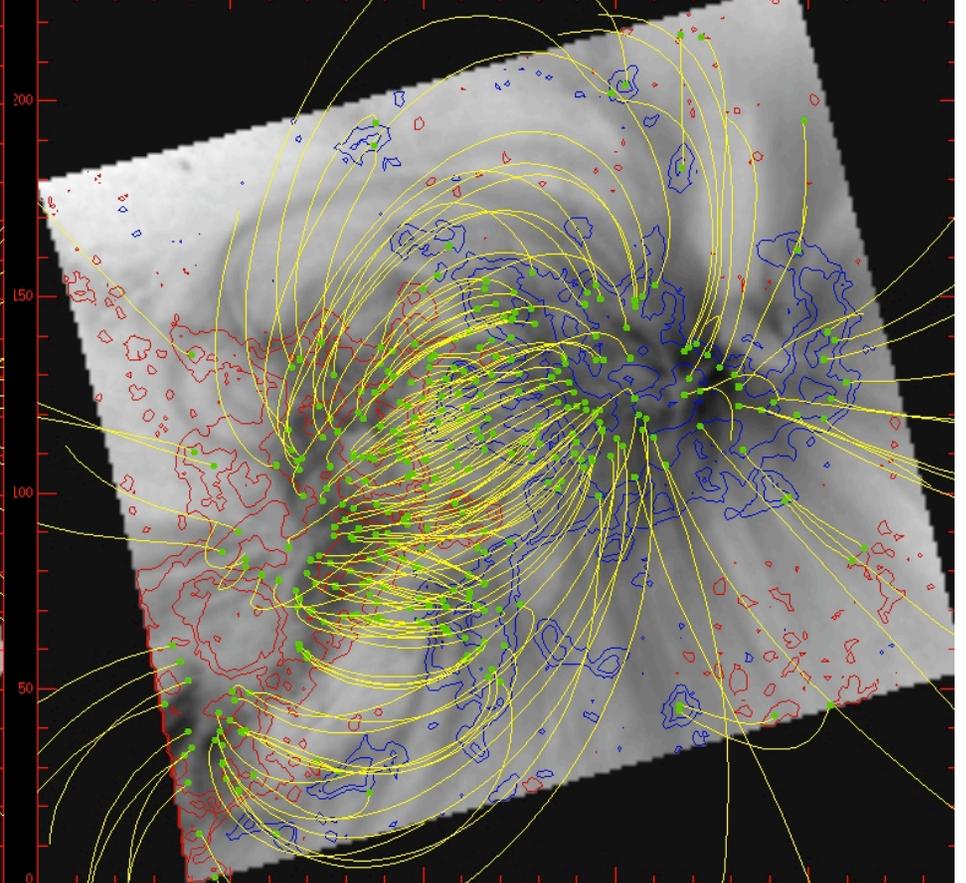
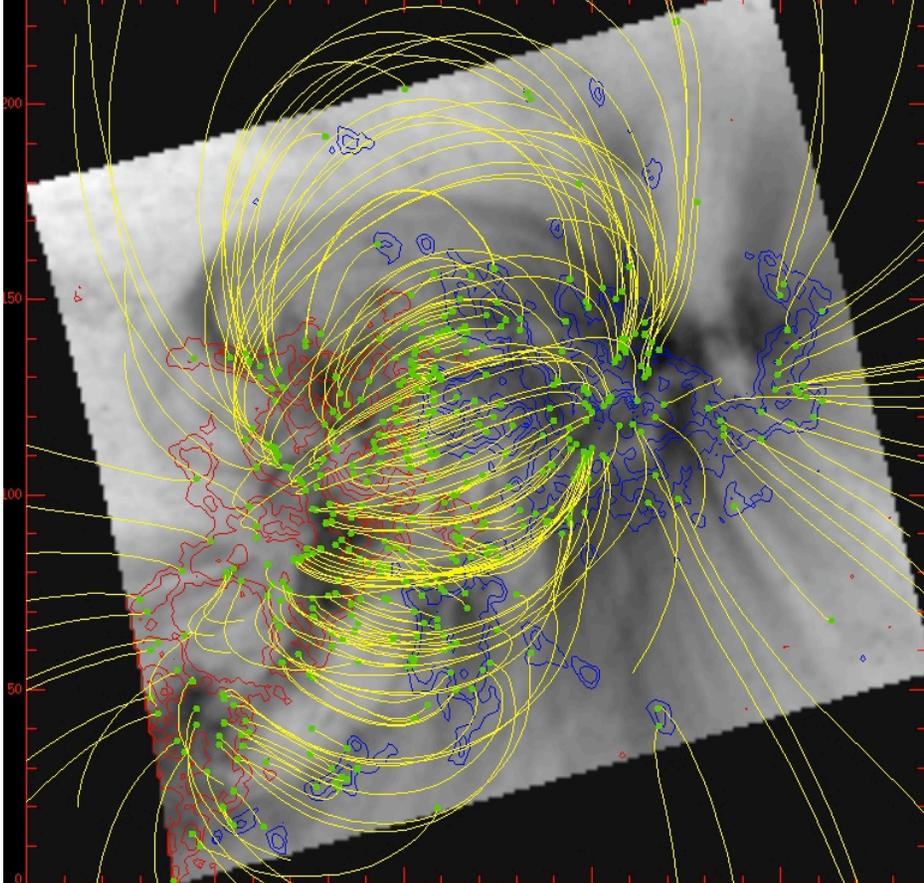
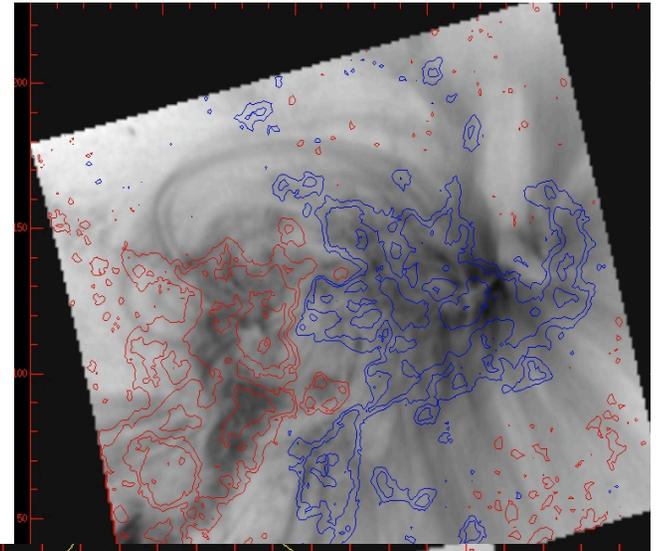
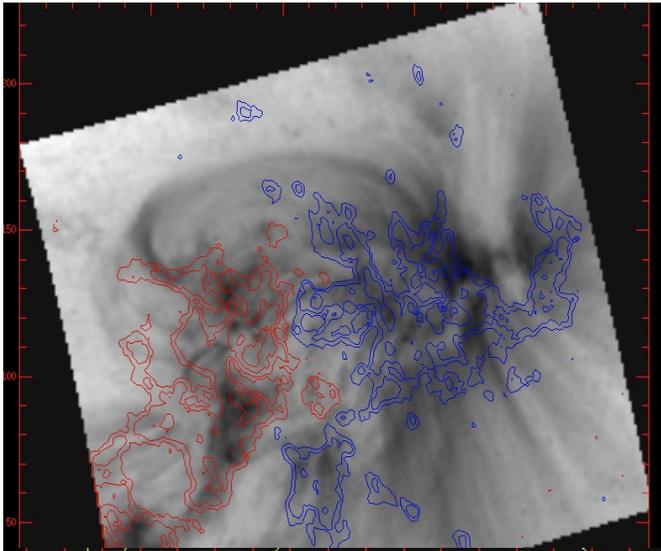
WG1: Understanding the Corona from Vector Field Measurements

Chromospheric vs. Photospheric Vector Fields – K.D. Leka

- Chromospheric field is force free. Does this give a better boundary condition for coronal field extrapolations?
- The linear force free extrapolations are different. But neither matches the TRACE loops very well.
- Need to use non-linear force free extrapolations?
- Note: extrapolations from both photospheric data and chromospheric data determine the connectivity reasonably well.

AR 10621:

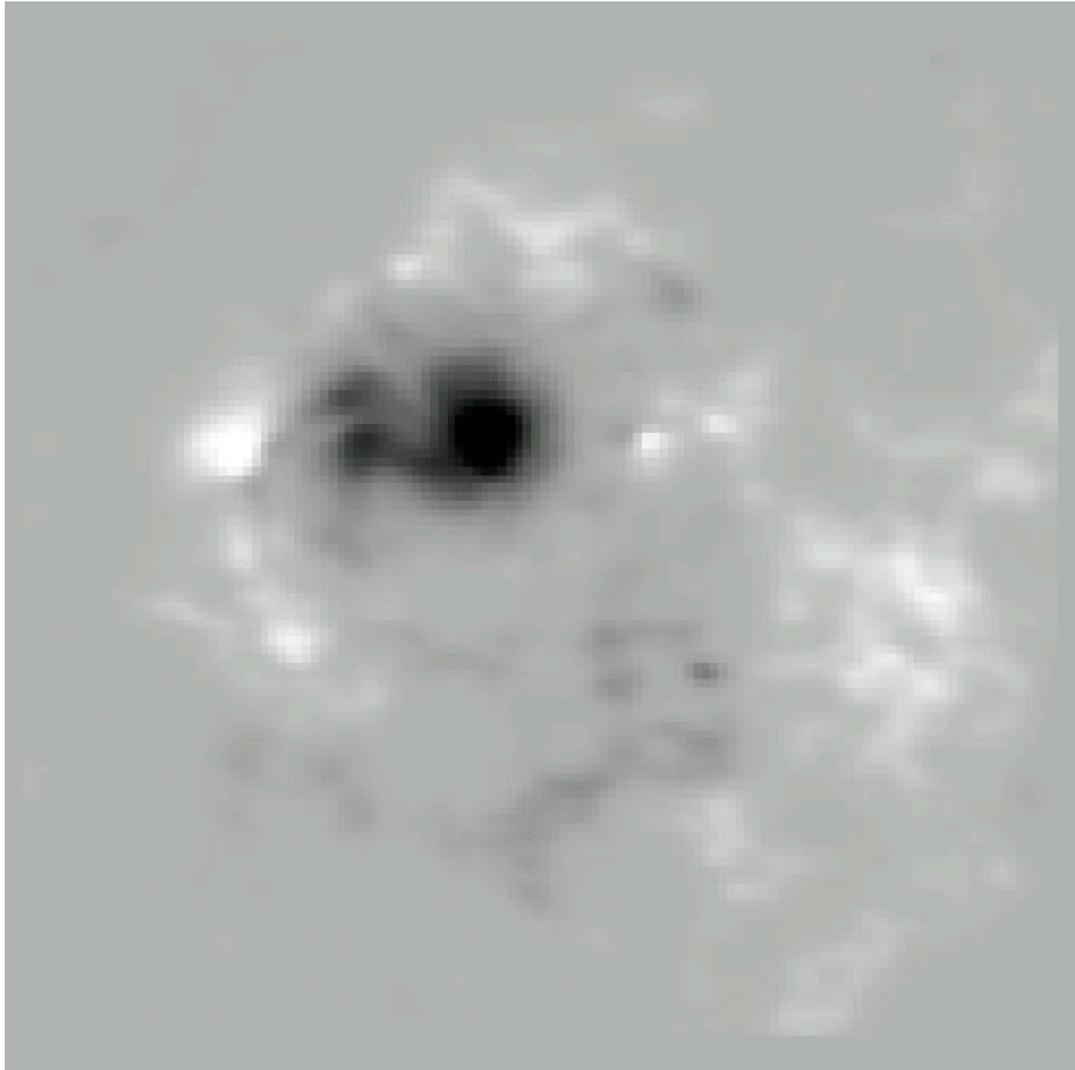
photosphere *chromosphere*



A Data Driven MHD Model of AR-8210 – Bill Abbett

- Incorporate observations of Magnetic Fields into MHD Models of the Corona.
- Two fully-coupled codes:
 - Boundary code: Flows prescribed by “Inductive Local Correlation Tracking”; the magnetic induction equation, continuity equation and a simple energy equation are solved implicitly in a thin boundary layer
 - MHD corona: the system of ideal MHD equations are solved on a non-uniform grid; the boundary code is fully coupled to the model corona.

Simulation of AR-8210: The Boundary Layers



- Vertical magnetic field from a 3D calculation initiated by an IVM vector magnetogram of AR-8210 at 19:40 (Regnier), and a NLFFF extrapolation (McTiernan)
- The simulation is driven by ILCT flows applied to the magnetogram at 19:40, and one approximately four hours later

Initial Measurements from the Coronal Multi-Channel Polarimeter – Steve Tomczyk

- Corona - Fe XIII 1074.4, 1079.8, Prominence - He I 1083.0
- Measure 2 Wavelengths Simultaneously
- 1024 x 1024 HgCdTe Detector,
 - $\pm 1.4 R_{\text{sun}}$ Field-of-View, 4.5 arcsec/pixel
- Sac Peak 20 cm “One Shot” Coronagraph

Initial Deployment Jan 2004

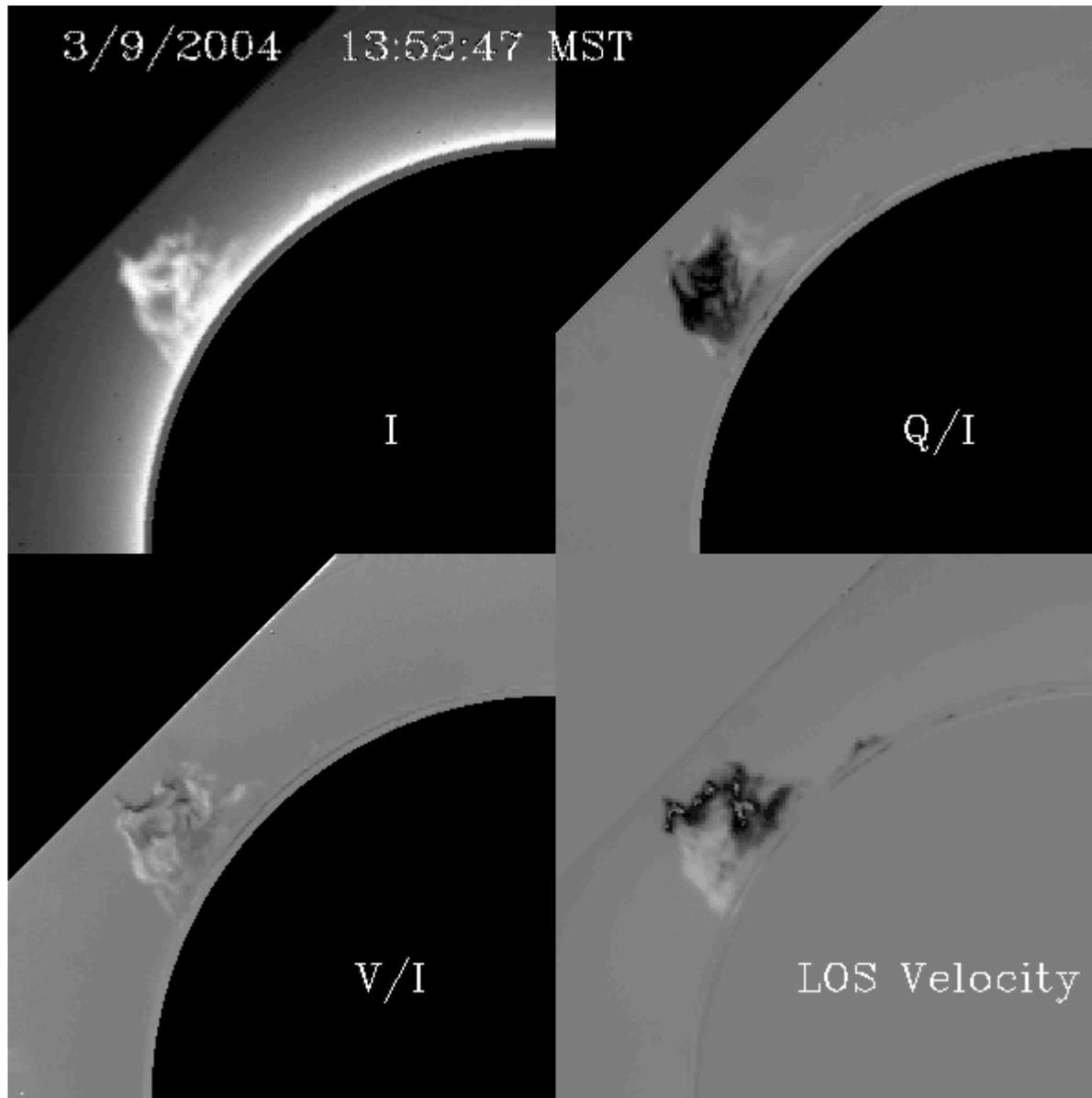
First 1083.0 Data, March 2004

First 1074.7 Data, May 2004

$$\dot{\sigma}(V) = 148 \text{ m/s/pixel/sec}$$

$$\dot{\sigma}(B_L) = 65 \text{ G/pixel/sec}$$

$$\dot{\sigma}(\square) = 0.94^\circ/\text{pixel/sec}$$

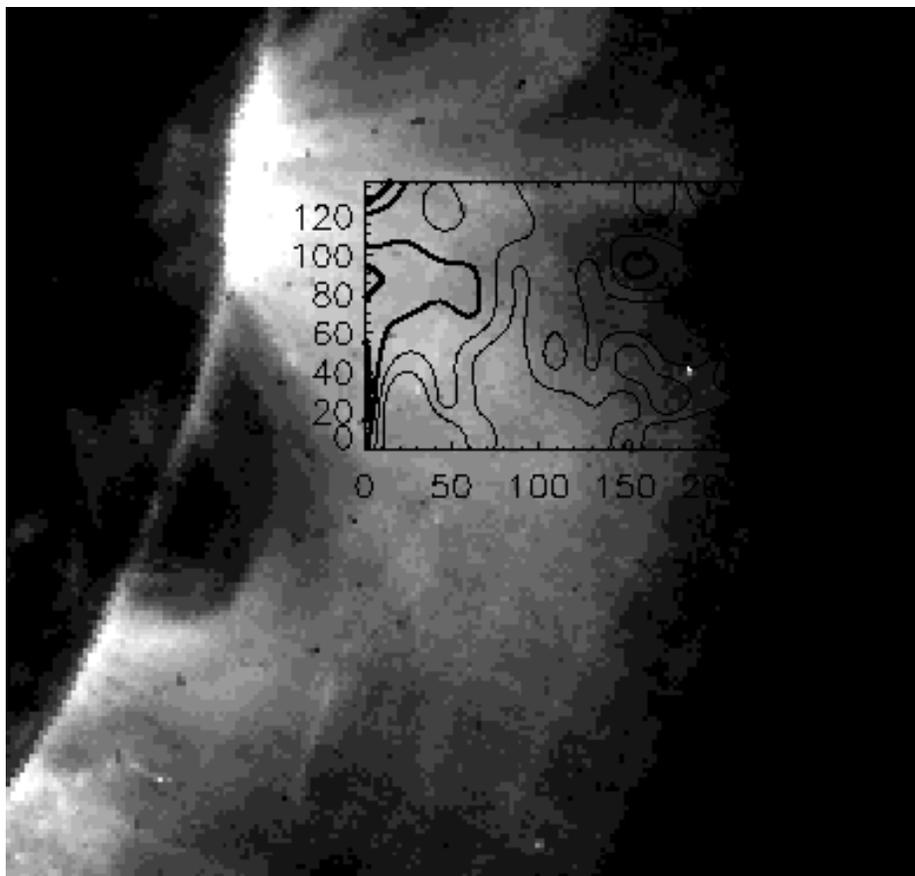


Infrared Zeeman Coronal Magnetic Field Measurements – Haosheng Lin

- Lin et al. (2000) demonstrated the feasibility of using polarimetry to measure the strength of coronal magnetic fields.
- 2D spatial coverage is now available for both longitudinal magnetic field strength and the orientation of the magnetic field projected in the plane of the sky.
- The IfA effort includes:
 - *Construction of a 50 cm aperture off-axis mirror coronagraph—**SOLARC***
 - *Construction of an **Optical Fiber-bundle Imaging Spectropolarimeter (OFIS)***

'Vector' Coronal Magnetogram

Longitudinal Magnetic Fields



Contour plot of the line-of-sight magnetogram over-plotted on the EIT FeXVI 284 A image. The contours are 5G, 3G, and 1G.

