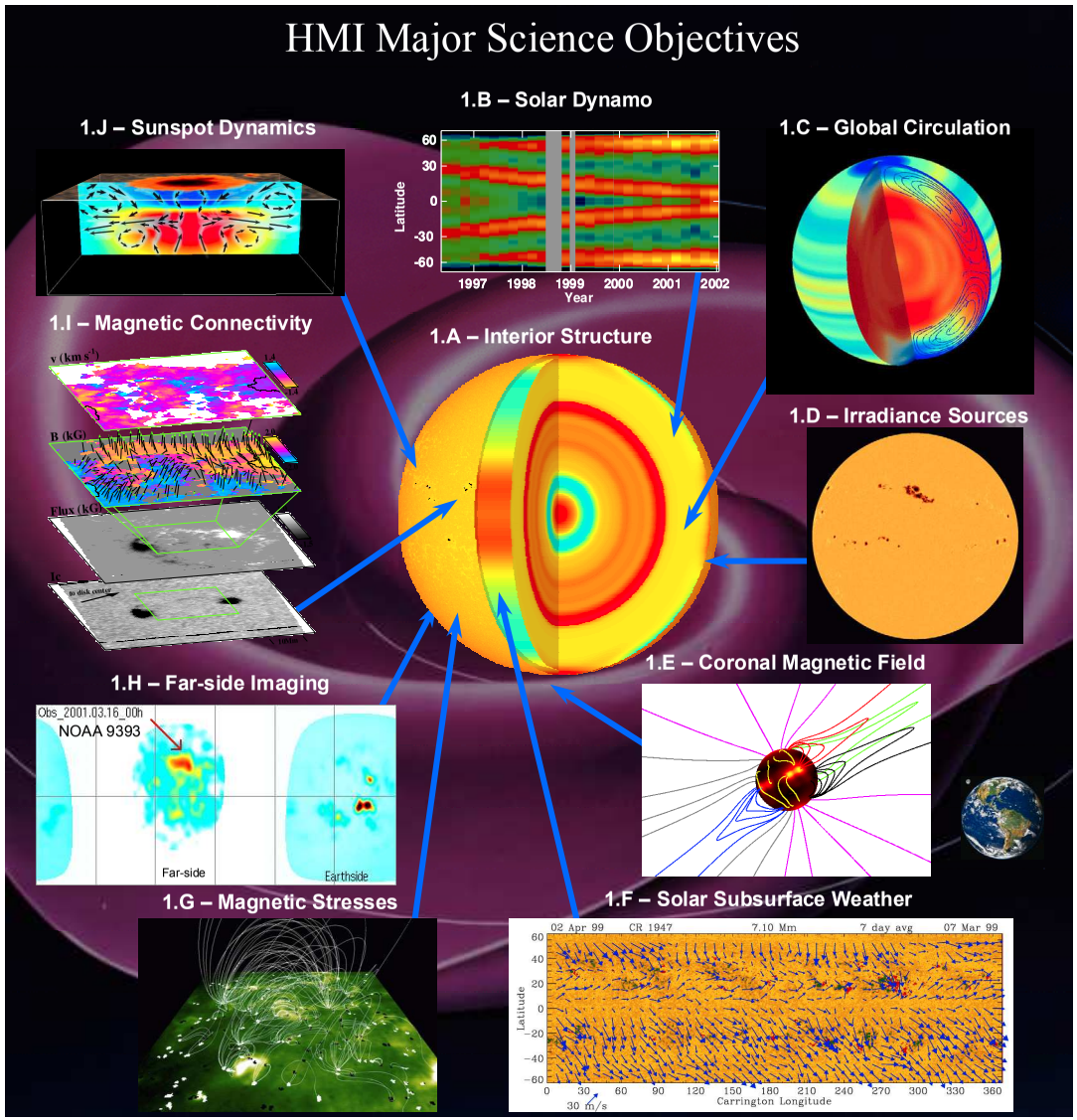


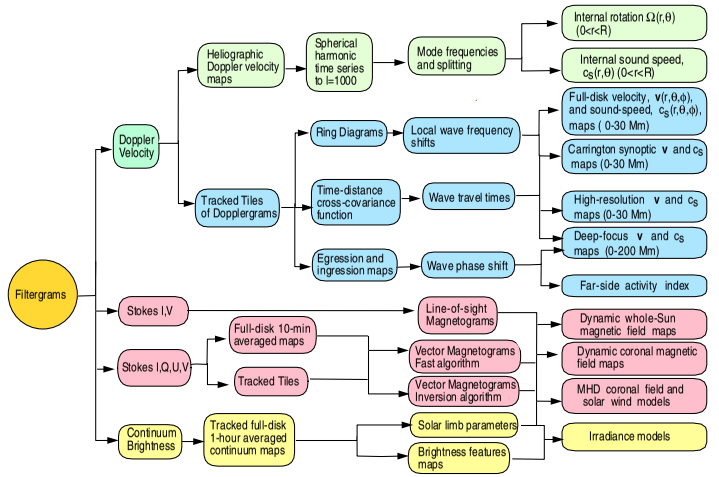

## 1.K - HMI Observables

| Doppler Velocity | |
|---|---|
| Cadence | 45 s |
| Precision | 13 m/s |
| Zero point accuracy | 0.05 m/s |
| Dynamic range | ±6.5 km/s |
| **Line-of-Sight Magnetic Flux** | |
| Cadence | 45 s |
| Precision | 10 G |
| Zero point accuracy | 0.05 G |
| Dynamic range | ± 4 kG |
| **Continuum Intensity** | |
| Cadence | 45 s |
| Precision | 0.3% |
| Accuracy pixel to pixel | 0.1% |

| Vector Magnetic Field | |
|---|---|
| Cadence | 90 s |
| Precision: | |
| Polarization | 0.22% |
| Sunspots (1kG<\|B\|<4kG) * | |
| \|B\| | 18G |
| Azimuth | 0.6° |
| Inclination | 1.4° |
| Quiet Sun (0.1kG<\|B\|<2kG) * | |
| \|B\| | 220 G |
| Total flux density | 35 G |
| Azimuth | 15° |
| Inclination | 18° |

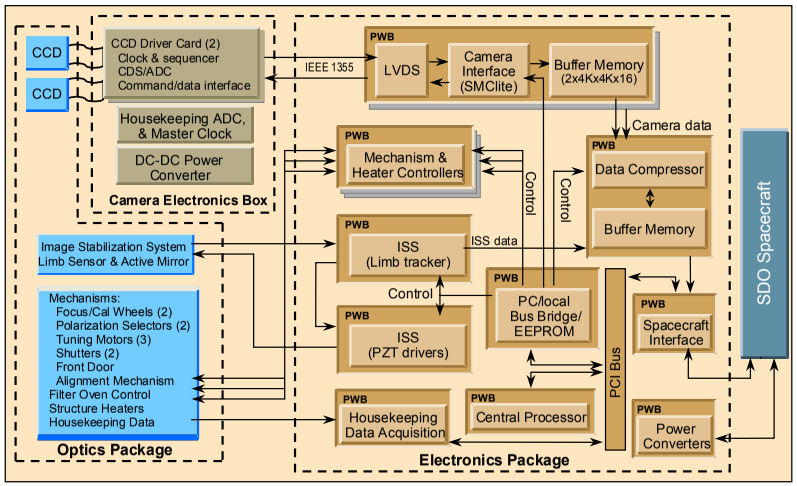
* See Figure C.12 for details

## 1.L - HMI Data Products

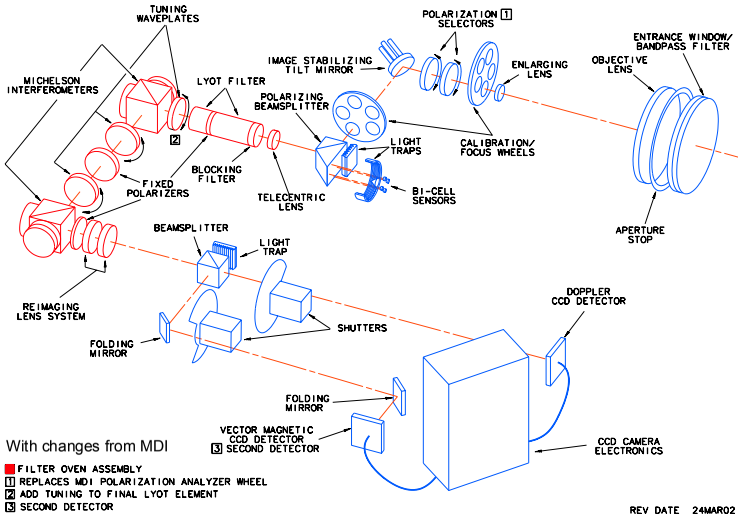



### Figure Captions

1.A) Sound speed variations relative to a standard solar model.
1.B) Solar cycle variations in the sub-photospheric rotation rate.
1.C) Solar meridional circulation and differential rotation.
1.D) Sunspots and plage contribute to solar irradiance variation.
1.E) MHD model of the magnetic structure of the corona.
1.F) Synoptic map of the subsurface flows at a depth of 7 Mm.
1.G) EIT image and magnetic field lines computed from the photospheric field.
1.H) Active regions on the far side of the sun detected with helioseismology.
1.I) Vector field image showing the magnetic connectivity in sunspots.
1.J) Sound speed variations and flows in an emerging active region.

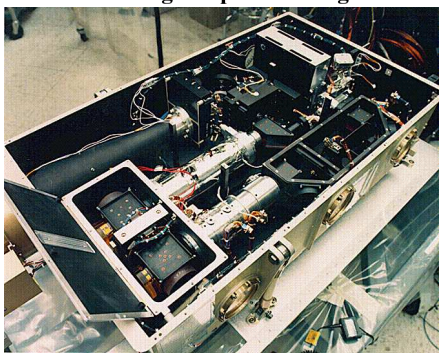


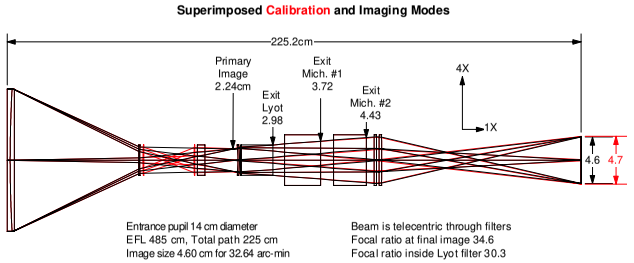

## 2.E - HMI Functional Block Diagram




## 2.A - HMI Optical Schematic and Layout

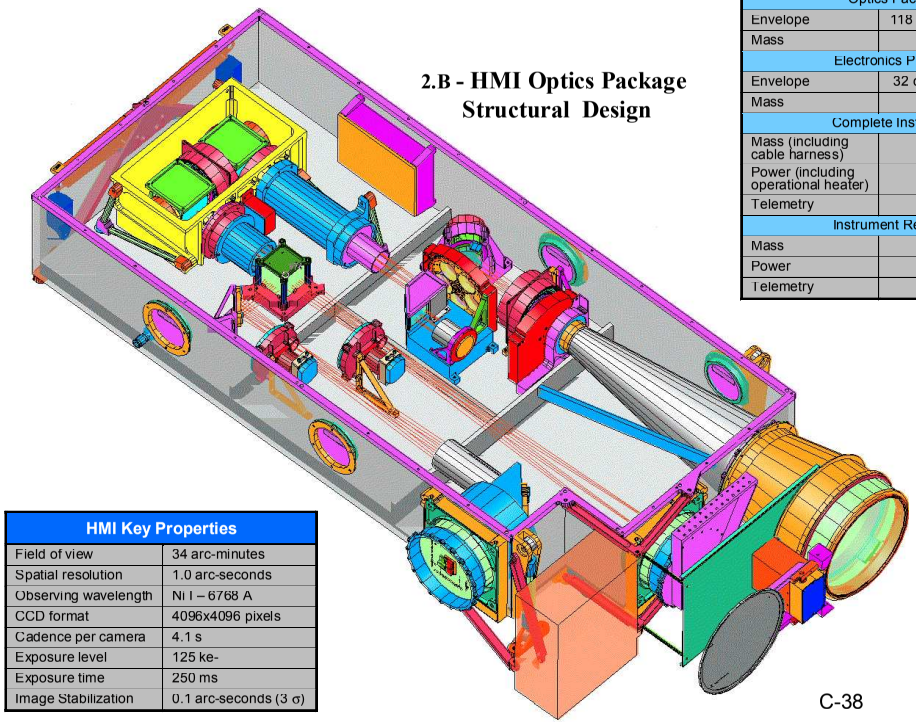
## 2.D - MDI Flight Optics Package






## 2.C - HMI Optical Design Raytrace

## 2.B - HMI Optics Package Structural Design



| HMI Resources | |
|---|---|
| **Optics Package** | |
| Envelope | 118 cm x 53 cm x 24 cm |
| Mass | 28 kg |
| **Electronics Package** | |
| Envelope | 32 cm x 28 cm x 21 cm |
| Mass | 15 kg |
| **Complete Instrument** | |
| Mass (including cable harness) | 46 kg |
| Power (including operational heater) | 60 W |
| Telemetry | 50 Mbit/s |
| **Instrument Reserves** | |
| Mass | 9 kg |
| Power | 12 W |
| Telemetry | 5 Mbit/s |

| HMI Key Properties | |
|---|---|
| Field of view | 34 arc-minutes |
| Spatial resolution | 1.0 arc-seconds |
| Observing wavelength | Ni I – 6768 A |
| CCD format | 4096x4096 pixels |
| Cadence per camera | 4.1 s |
| Exposure level | 125 ke- |
| Exposure time | 250 ms |
| Image Stabilization | 0.1 arc-seconds (3 σ) |