TRACE/BBSO Jont Observations on September 1998

1. The Outline

1. Objectives
    - Microflares
        (a) To reveal the relationship among microflares, mini-filaments, and jets
        (b) To examine physical similarities and differences among different scale flares
    - Bright Points
        (a) To find a possible connection between seismic events and bright points
        (b) To examine whether there are different kinds of bright points, for example, magnetic bright points and non-magnetic bright points
2. Dates and Times
    - 1998 September 19-21 for the quiet Sun
    - 1998 September 27-28 for active regions

2. Observing Sequences

1. TRACE
    - Bright Point Fast Mode: WL + 1700 (cadence higher than 30 s)
    - Bright Point Altitude Mode: WL + 1700 + 1216
    - Microflare QS Fast Mode: 1550
    - Microflare QS Altitude Mode: 1700 + 1550 + 171
    - Microflare AR Fast mode: 1550 + 171
    - Microflare AR Altitude mode: 1216 + 1550 + 171 + 195
2. BBSO without Spectrograph
    - deep longitudinal magnetograms(QS) or vector magnetograms(AR)
    - Ca II K2V
    - H alpha -0.65 A
3. BBSO with Spectrograph
    - deep longitudinal magnetograms (QS) or vector magnetograms (AR)
    - Hα spectrograph scan
4. OVRO microwave observations

3. Hα Spectrograph Sequences

1. Using the COHU videocamera

   - One side of an optical disk can save 36000 video frames.
   - **Spectrogram setup**: According to the previous experiments, we have, after the 320$\times$240 digitizations, $\Delta y = 0.48''$ and $\Delta\lambda = 29$ mÅ so that each spectrogram can cover 9.28 Å$\times$115$''$. If we do not include the slit-jaw image, then we can include the photospheric line Fe I 6569.224 in addition to the Hα 6562.808 line.
   - **Scan**: If the recording rate is 30 frames/sec, the spatial shift between two successive spectrogram is $\Delta x = 0.5''$. Thus covering the FOV of $100'' \times 115''$ requires 200 frames of spectrograms and 7 seconds of time.
   - The time resolution and coverage finally determines the total number of frames. For example, if we scan every 1 minute, one side of an optical disk can keep the data taken for 3 hours.

2. Using the Dalsa digital camera

   - **Spectrogram setup**: If we use the same optical setup as the last time observation, each spectrogram obtained by the Dalsa camera covers $9.28 f_\lambda$ Å$\times 115 f_y''$ where f_λ and f_y are the ratios of the physical detector size of the Dalsa camera to that of the COHU camera. We found that $f_\lambda = 0.64$ and $f_y = 0.85$, if we used the COHU 4910 camera, and $f_\lambda = 0.47$ and $f_y = 0.62$ in the case of the COHU 4810 camera. Thus the Dalsa camera covers either 5.93Å$\times 98''$ or 4.36Å$\times 71.3''$.
   - If we select 30 frames every second with an equal time interval, the spatial shift between two successive spectrogram is $\Delta x = 0.5''$. Thus covering the FOV of $100'' \times 115 f_y''$ requires 200 frames of spectrograms, 7 seconds of time, and 20 Mb of storage.
   - If we make a scan every 1 minute, 1 hour duration observation produces 1.2 Gb data.