23.06
Millimeter, Microwave and X-Ray Morphology and Spectra of the 07Jan92 Flare
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We present here an analysis of the flare observed on 7 January 1992 by BIMA (Berkeley-Illinois-Maryland Millimeter Array), during the December 91-January 92 Solar Max 91 campaign. The burst was detected simultaneously by the solar dedicated frequency agile interferometer at OVRO (1 to 18 GHz), the VLA (2, 1.5 and 0.33 GHz), and in X-rays by Yohkoh and GOES.
Microwave and X-ray time profiles of the flare show two bursts. The first one at 0222 UT was recorded by OVRO, Yohkoh and the VLA at 5 GHz. The second burst occurred at 0225 UT, and was observed in X-rays by GOES and Yohkoh (SXT and BXT), and in microwaves by OVRO and the VLA at 1.5 and 0.33 GHz. Both the soft X-ray high resolution images from Yohkoh and the microwave maps from the VLA and OVRO show that this flare had a complicated spatial structure. Yohkoh's soft X-ray images show multiple loops within which different sources brighten at different times. There is good coincidence between the microwave maps and footpoints of the soft X-ray loops.
BIMA, operating at 89 GHz, was only sensitive to sources smaller than about 10" due to its configuration at the time of the burst. BIMA was pointing approximately 100° to the east of the site of the main flare, at the end of an east-west loop seen in soft X-ray. It has a field of view of 120° and therefore missed the main flare. BIMA detected a single burst at about 0266 UT, a delay of almost a minute from the flare detected by the other instruments. Yohkoh's soft X-ray images show a brightening within BIMA's field of view. However, little (if any) microwave emission is seen from this region in OVRO maps. We discuss the implications for the millimeter wave emission mechanisms in this flare.

23.07
Flares in Active Region NOAA 7260 - Role of Emerging Flux and Reconnection
We have studied the evolution of flare activity in NOAA 7260, using X-ray and optical images obtained by the Soft X-ray Telescope (SXT) on the Yohkoh spacecraft and various groundbased data including magnetograms and H-alpha on- and off-band images obtained at the Mees Solar Observatory and National Astronomical Observatory of Japan. Although the active region apparently did not exist during the previous rotation, it emerged on the eastern limb already consisting of a well-developed preceding spot and a growing emerging flux region embedded in the following plage area. There are at least four locations within the region that had high flare activity as it evolved. It appears that, in most of the two dozens of > C1 flares in this region, emerging flux, whether short-lived or long-lived, either played an active role of interacting with existing field or at least destabilized the field configuration, resulting in reconnection of older loops. We will select a few typical emerging flux flares in the region and discuss them in detail.
The Lockheed work was supported by NASA contract NASR-37334 with MSFC and the Lockheed Independent Research Programme.

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23.08
Ho Impact Polarization Observations in Solar Flares
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We give preliminary results from the first use of the University of Hawaii's new Imaging Vector Magnetograph (IVM) to search for linear polarization in the H-alpha spectral line during solar flares. Such polarization has previously been interpreted as impact polarization from 100 keV protons impacting the chromosphere. The new observations have several advantages over previous data. First, the field of view (4.6 arcmin) is substantially larger than that available previously; second, the temporal resolution (15 s) is a factor of two better than that previously obtained. We present observations of several large flares in October 1992, comparing the flare Hα polarization with hard X-rays observed by the Compton Observatory.

23.09
Upgraded High Speed Hα Camera Begins Observations of Linear Polarization
A. L. Kiplinger, T. Kellihier, R. Meiner (U. of Colorado)
The High Speed Hα Camera system, developed at NASA Goddard Space Flight Center, has been upgraded to rapidly measure linear polarization in solar flares. The upgrade was carried out to spatially and temporally identify portions of flares that may be subject to impacts of low/intermediate energy particles. By means of synchronously rotating a zeroth order half-wave plate in front of the original camera system, the amplitude and spatial angle of linear polarization can now be measured with a time resolution of 0.53 seconds. The first test measurements indicate that the degree of polarization can be measured to levels well below one percent. As of early May 1993, observations of flares have not yet been obtained. Observations will be conducted when solar conditions are favorable.

23.10
Yohkoh Observations During the CoMSiOC'92 Campaign
K. Strong (LSAL), G. Holman (GSFC), and J. Schmelz (Rhodes, TN)
The CoMSiOC'92 campaign consisted of a series of VLA observations supported by a network of observatories and spacecraft. The object of CoMSiOC'92 was to obtain improved diagnostics of the coronal plasma and, consequently, attempt to measure the coronal magnetic field strength in quiescent active regions from the comparison of the X-ray and microwave emissions. One of the primary elements in the campaign was the Soft X-ray Telescope (SXT) on Yohkoh which provided the geometry, evolution, temperature, and emission measure of the thermal active-region plasma. This paper summarizes the observations taken by SXT during CoMSiOC'92 and some of the initial results. The Sun produced a variety of conditions over the six-week period during the campaign, giving us an opportunity to study many different features. For example, observations taken on 1-2 May 1992 with the VLA, RATAN-600, and SXT (Lang et al. 1993) show a continuously changing region with particularly strong magnetic fields in the corona, indicating that we do not see a diverging field as would be expected from a simple dipole model. The SXT has particularly interesting observations of an emerging flux region in combination with the VLA and the Solar Plasma Diagnostics Experiment which was flown on a sounding rocket from White Sands on 12 May 1992 (Bruner et al. 1993). Other studies are getting underway and this campaign should provide an interesting contrast to the earlier CoMSiOC campaign with SMM.
The Lockheed work was supported by NASA contract NASR-37334 with MSFC and by the Lockheed Independent Research Programme.