

M24a **The Extrapolated 3-D Solar Magnetic Fields in AR 7321**

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The 3-D nonlinear force-free magnetic fields in AR 7321 on October 26, 1992 has been computed by means of a new numerical method, in which force-free fields are represented by a boundary integral equation based on a specific Green's function. The photospheric vector magnetic fields measured in AR 7321 with the Solar Flare Telescope at NAOJ/Mitaka were taken as the boundary conditions of this equation. In this numerical extrapolation, the following three points are emphasized:

- (1) A package of IDL software suitable for large data arrays has been developed, which is able to process an array with size of 150×150 in 3 hours with a SUN Sparc 10 workstation. This means that this package is useful to deal with a large amount of observational data.
- (2) A new method for data reduction has been proposed, which makes the extrapolated fields in agreement with structures in H_α and Yohkoh soft X-ray images.
- (3) The extrapolated 3-D fields satisfy the divergence-free and force-free conditions in high precision.