

Solar physics in Sweden remains concentrated in the Stockholm group led by Prof. Göran Scharmer that is funded by the Royal Swedish Academy of Sciences.

A 1996 highlight was the completion of Mats Löfdahl's thesis on phase diversity techniques for wavefront correction. Phase diverse registration (taking synchronous pairs of frames, one in focus and the other slightly out of focus) permits restoration of atmospheric as well as telescopic wavefront perturbations to high degree. When combined with speckle-like multiple-realization statistics in the form of short sequences of phase-diverse frame pairs, the restorations reach a high level of uniqueness and reliability (ApJ 466 1087 1996).

Instrumental developments at the Swedish Vacuum Solar Telescope concentrated on Stokes polarimetry. In a collaborative project with the IAC group, Stokes polarimetry is being developed using the SVST Littrow spectrometer. The design follows that of the ASP (HAO–NSO), including the use of an HAO-built CHIL camera, except that liquid crystal retarders are used for the Stokes encoding. Together with the Lockheed-Martin Palo Alto group, a liquid crystal Stokes filtergraph has been tested using a Fe I 5250 polarizing beam splitter and the SOUP tunable filter, respectively. The results are promising.

Dan Kiselman continued studies of 3D line formation in the solar atmosphere with stellar applications. As usual, the SVST was also used in observing programs by non-Swedish colleagues, including successful runs together with SOHO instruments.