Factor Analysis as a Tool for Spectral Line Component Separation
21cm emission in the direction of L1780

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The spectra of the 21cm HI radiation from the direction of L1780, a small high-galactic latitude dark/molecular cloud, have been analysed by multivariate methods.

Factor analysis has been performed on HI (21cm) spectra in order to separate the different components responsible for the spectral features. The rotated, orthogonal factors explain the spectra as a sum of radiation from the background (an extended HI emission layer), and from the L1780 dark cloud.

The coefficients of the cloud-indicator factors have been used to locate the HI "halo" of the molecular cloud.

Our statistically derived "background" and "cloud" spectral profiles, as well as the spatial distribution of the HI halo emission distribution have been compared to the results of a previous study (Mattila and Sandell, 1979) which used conventional methods analysing nearly the same data set.

Reference:
Mattila, K. and Sandell, G., 1979, A&A, **78**, 264.