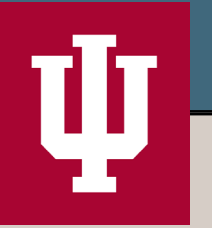


# SpArc: Preservation of 20 Years of Spectrographic Data

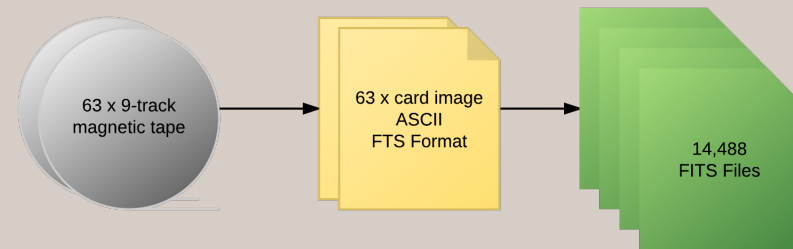
Michael Young, Dennis H. Brokaw, Catherine Pilachowski, Arvind Gopu



## Mayall Fourier Transform Spectrograph (1975-1995)

- ~15,000 infrared spectra taken over 20 years
- ~120 refereed papers (20 since 2000)
- Coverage from 0.3 - 30 microns
- Resolution of  $\sim 20 \text{ cm}^{-1}$  to  $0.005 \text{ cm}^{-1}$
- Magnitude limit in the K band was about  $K=4$  for resolving power  $R = \sim 20,000$  with S/N of 100 in 4 hours of observing

- 900 individual (non-solar system) targets observed
- 780 individual stars, most with multiple observations
- Observations of the Galactic center, variety of protostars and Galactic star-forming regions, and several galaxies
- Multiple observations of Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Comet IRAS, Titan, Io, and the Moon



- Data were stored on 63 x 9-track magnetic tape until late 90's
- Dumped as ASCII representation of FTS format
- Last 2 years - conversion to FITS
- Original metadata preserved and enhanced
- SpArc (Spectra Archive) at IU created to preserve and distribute these spectra
- Available now <http://sparc.sca.iu.edu> - no registration, no login
- Preprint paper with more details: <https://arxiv.org/abs/1610.02535>

The screenshot displays the SpArc website interface. At the top, there are search filters for Position (Cone/Box), Classification (Object Name, Object Class, Spectral Type), Date (1975-05-24 to 1995-06-16), and Magnitude (+ Add Limit). Below the filters is a table of search results showing columns for Flags, Object, Object Class, and Spectral Type. The first row is for 'VENUS'. Below the table is a spectral plot for 'R Lyr' showing flux versus Wavenumber (cm<sup>-1</sup>) from 5400 to 7200. The plot includes a 'Download' button and a 'Spectra' section. At the bottom, there are sections for 'Observations 1982-04-08' and 'FITS Headers'.

Object	Time	Primary	Extension 1	Extension 2
CE Tau	20:34:26			
HD 95735	22:55:29			
g Her	06:17:59			
rho Per	16:21:15			

```
PRIMARY      T / Standard FITS Format.
BITPIX       -32
NAXIS        0 / Each spectrum scan is in an image extension.
EXTEND       T
```