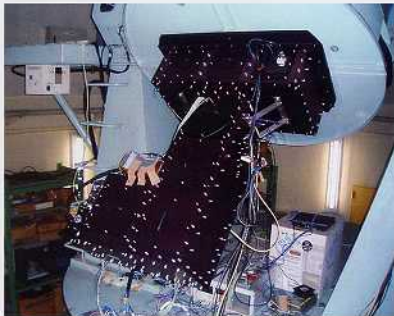


LIPS:

Echelle Spectro-Polarimeter

(Tohoku Univ., NAOJ, Kyoto Univ., Gunma Univ.)

High Resolution Spectro-Polarimetry of Emission-Line Objects

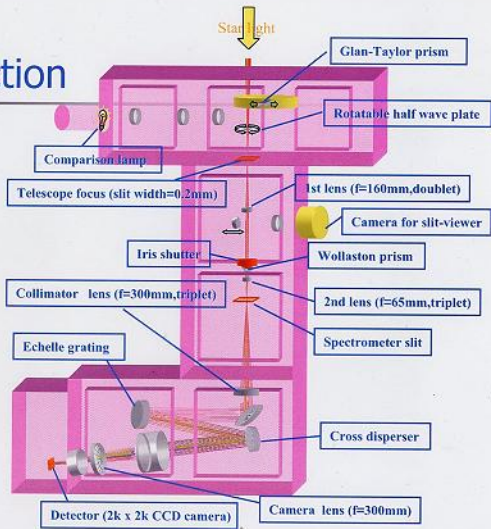




Specification

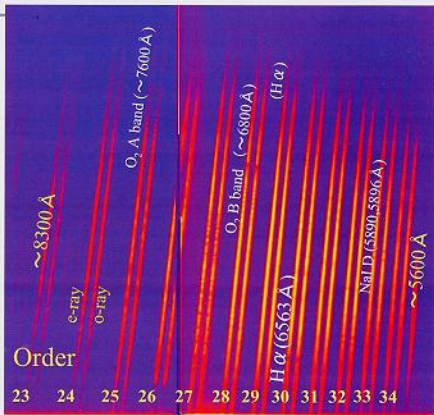
- LIPS can provide both e and o images over the range of 400 to 800nm with a spectral resolution of 0.05nm.
- The present polarimetric accuracy in P is estimated to be 0.15% or better.
- The limiting magnitude may be mv~14 mag for 1 h integ @SUBARU

Construction



First Light

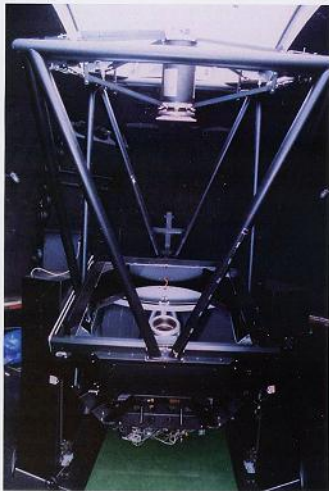
Echelle spectra
for η Aql
taken with LIPS
on Oct. 23, 2001
@ Mitaka

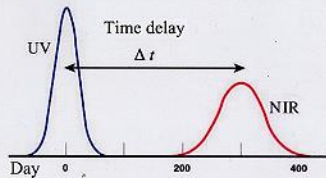
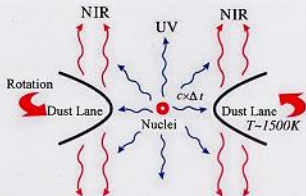
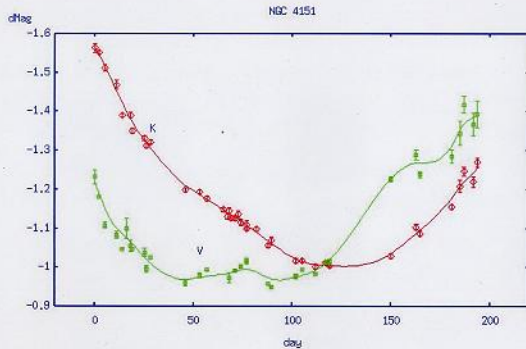


MAGNUM Station

(Univ. of Tokyo)

Multi-color Active Galactic
NUclei Monitoering





[CI] Observations with Mt. Fuji Submillimeter-wave Telescope

- [CI] 3P_1 - 3P_0 (492 GHz)

Large-scale Mapping ($\sim 35 \text{ deg}^2$)

GMC: Orion A, Orion B, M17, W51, DR15,
DR21, W3 etc.

Dark Cloud: HCL2, ρ Oph, L134 etc.

- [CI] 3P_2 - 3P_1 (809 GHz)

Mapping toward representative sources

Orion A, Orion B, DR21, NGC1333 etc.

Why Atomic Carbon?

- Carbon:
The fourth abundant element after H, He, and O
 - Two fine structure lines:
 $^3P_1 - ^3P_0$ 492 GHz, $^3P_2 - ^3P_1$ 809 GHz
 - Tracer of photodissociation regions (PDR):
Link between the atomic gas and molecular gas
- Structure and Formation of Molecular Clouds



Mt. Fuji Submillimeter-wave Telescope

Orion A

CI
($^3P_1 - ^3P_0$)



DECLINATION (B1950)

-8°

-6°

-4°

05^h40^m

35^m

30^m

RIGHT ASCENSION (B1950)

T_{MB} (K)

5

0

0 20
 V_{lsr} (km/s)

Observed with Mt. Fuji Submillimeter-Wave Telescope.
(1998-1999)

[CI] Observations with Mt. Fuji Submillimeter-wave Telescope

- [CI] 3P_1 - 3P_0 (492 GHz)

Large-scale Mapping ($\sim 35 \text{ deg}^2$)

GMC: Orion A, Orion B, M17, W51, DR15,
DR21, W3 etc.

Dark Cloud: HCL2, ρ Oph, L134 etc.

- [CI] 3P_2 - 3P_1 (809 GHz)

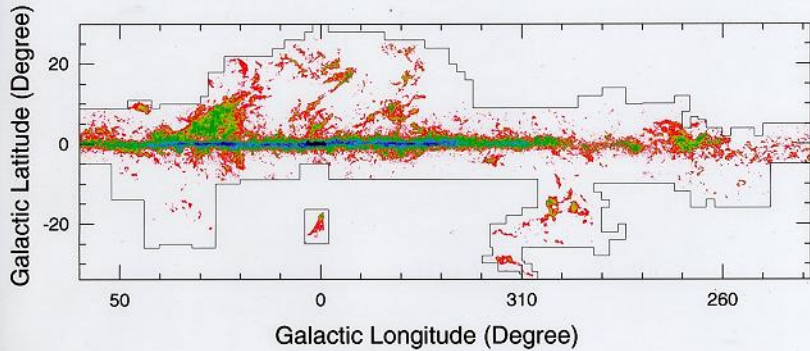
Mapping toward representative sources

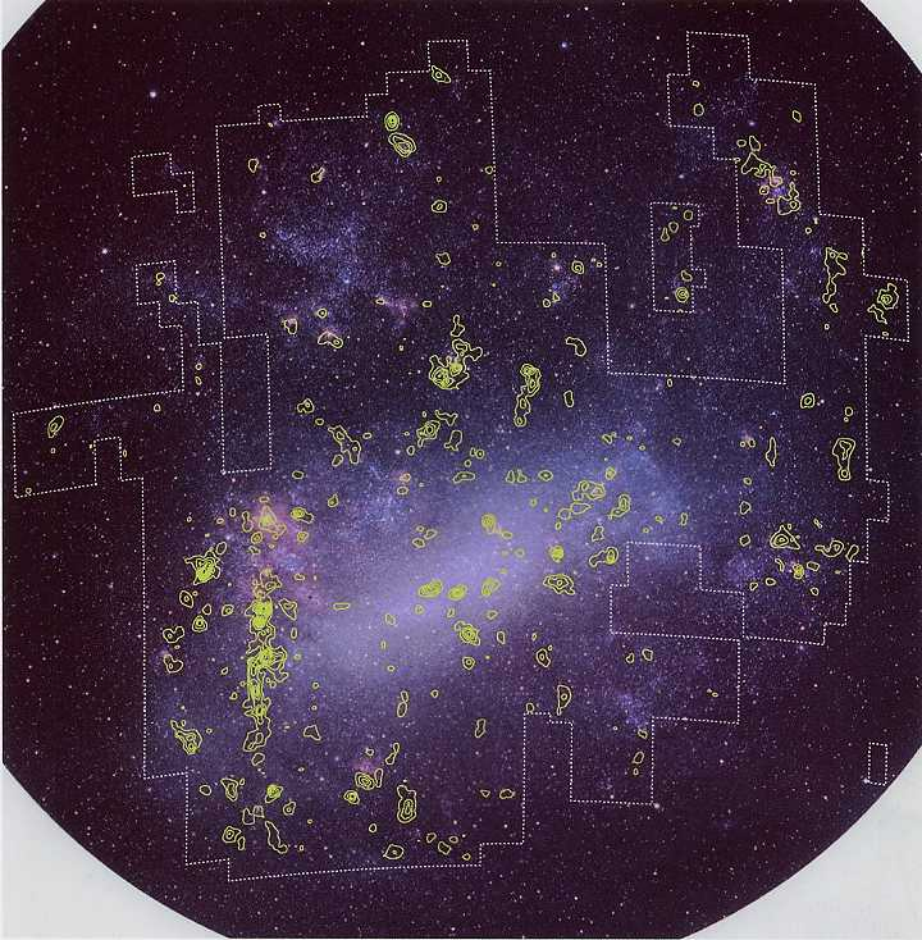
Orion A, Orion B, DR21, NGC1333 etc.

NANTEN Telescope

CO 115 GHz₁







Near Infrared Survey of Southern Objects (Nagoya University)

J, H, K_s Imaging
of LMC and SFRs





30 Dor in LMC

2000 Nov — present

IRSF Infrared Survey
Facility 1.4m telescope
at SAAO

(370km from Cape Town)

SIRIUS Simultaneous
J, H, Ks imager

(3 HgCdTe of 1024×1024)

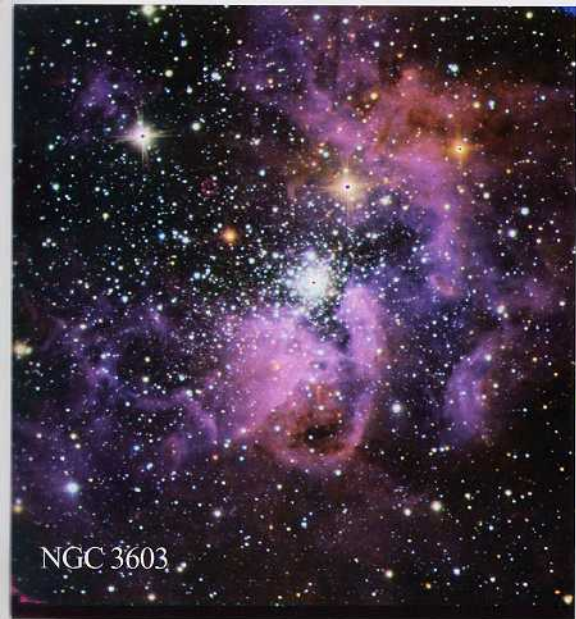
FoV: 7.8'×7.8'

Lim mag (15min 10 σ)

J =19.2

H =18.6

Ks=17.3



Usually ~2 observers
from Japan

LMC $6^{\circ} \times 6^{\circ}$

Star formation

Mira variables

ISM

. . .

Galactic SFRs

Galactic Center

Star clusters

ZoA

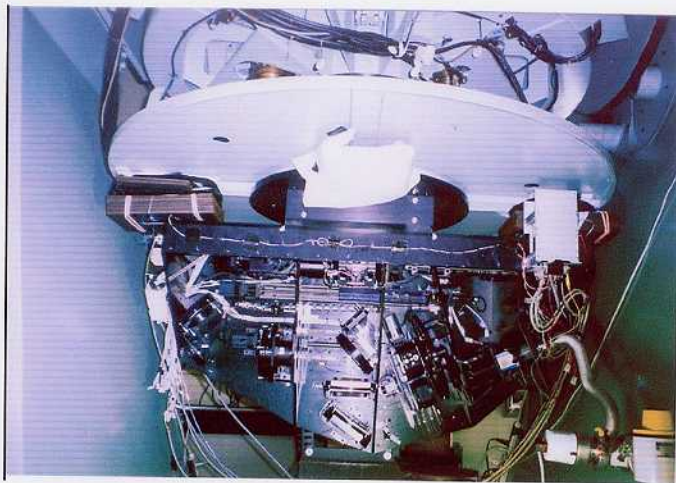
Great Attractor

The Kyoto Tridimensional Spectrograph II

P.I. H.Sugai (Dept. Astronomy, Kyoto Univ.)
sugai@kusastro.kyoto-u.ac.jp

- Project

3D-Spectroscopic Study of Active Galaxies
——from LINER to high- z QSO——

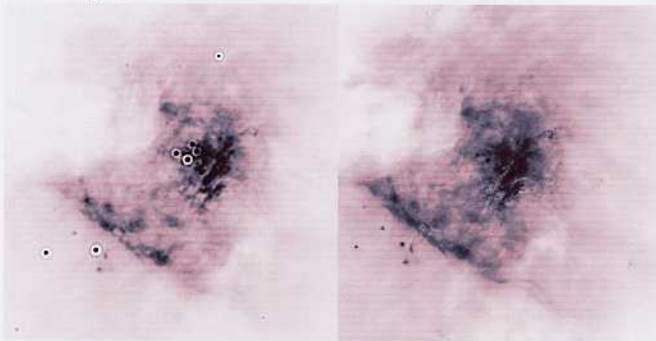


Kyoto-3DII on 1.5m telescope (June 2000)

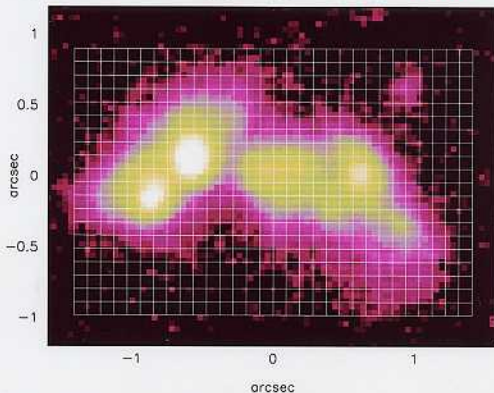
Fabry-Perot image of M42 taken with the
1.5m telescope

Kyoto 3D II

HST

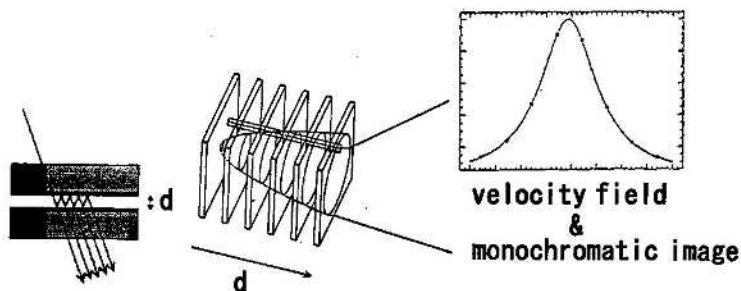


Example of Spatial Sampling of
Spectral-Mapping with **Subaru**

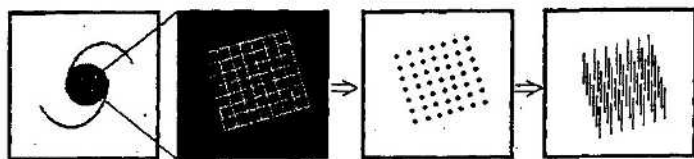


HDF2-736.1

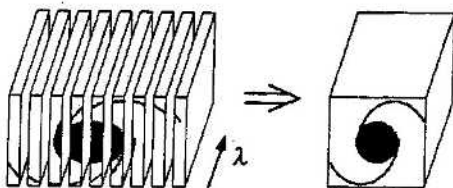
Observational modes of Kyoto-3D II



(1) Fabry-Perot
($0''.06/\text{pixel}$ at Subaru)



(2) Integral field spectrograph
($0''.1/\text{lens}$ at Subaru)



(3) Long slit
($0''.06/\text{pixel}$ at Subaru)