

# When imaging and spectroscopy come together: Integral Field Spectroscopy

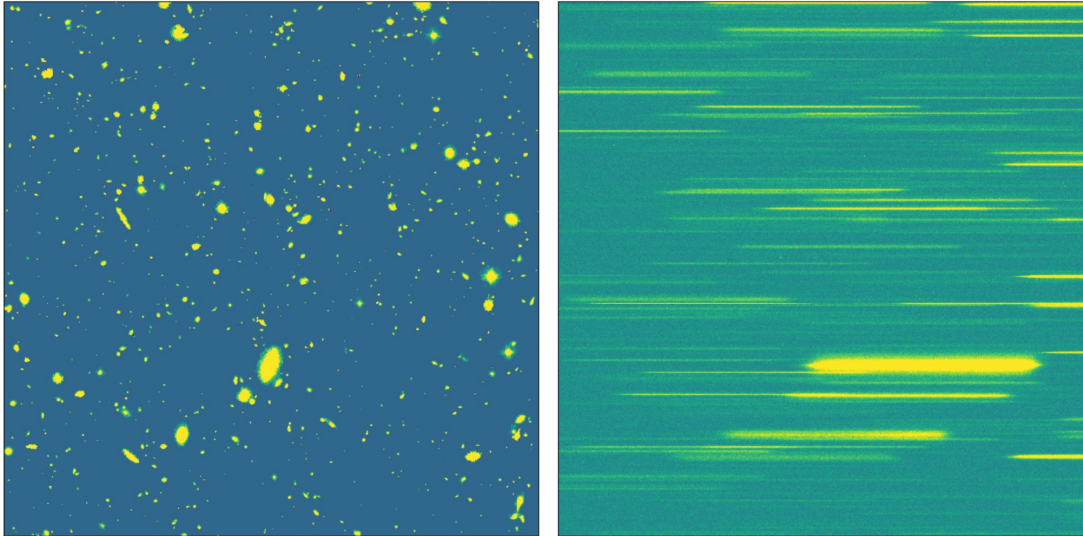
## Lecture 11

Course of:  
**Signal and imaging acquisition and modelling in environment**

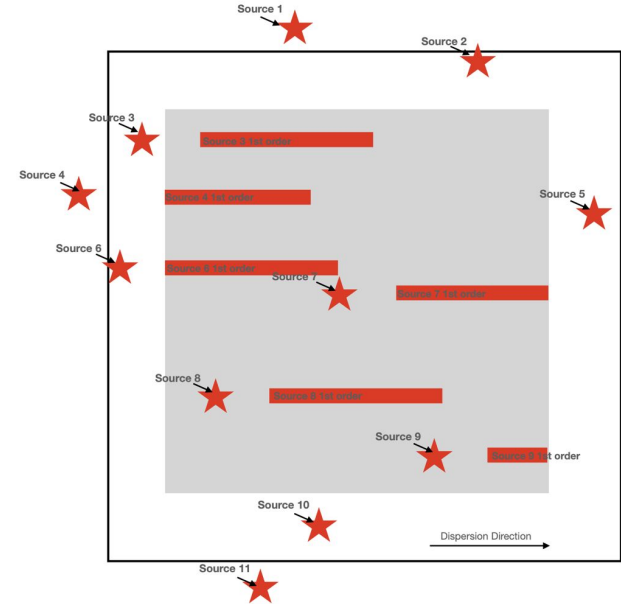
12/04/2024

*Federico De Guio - Matteo Fossati*

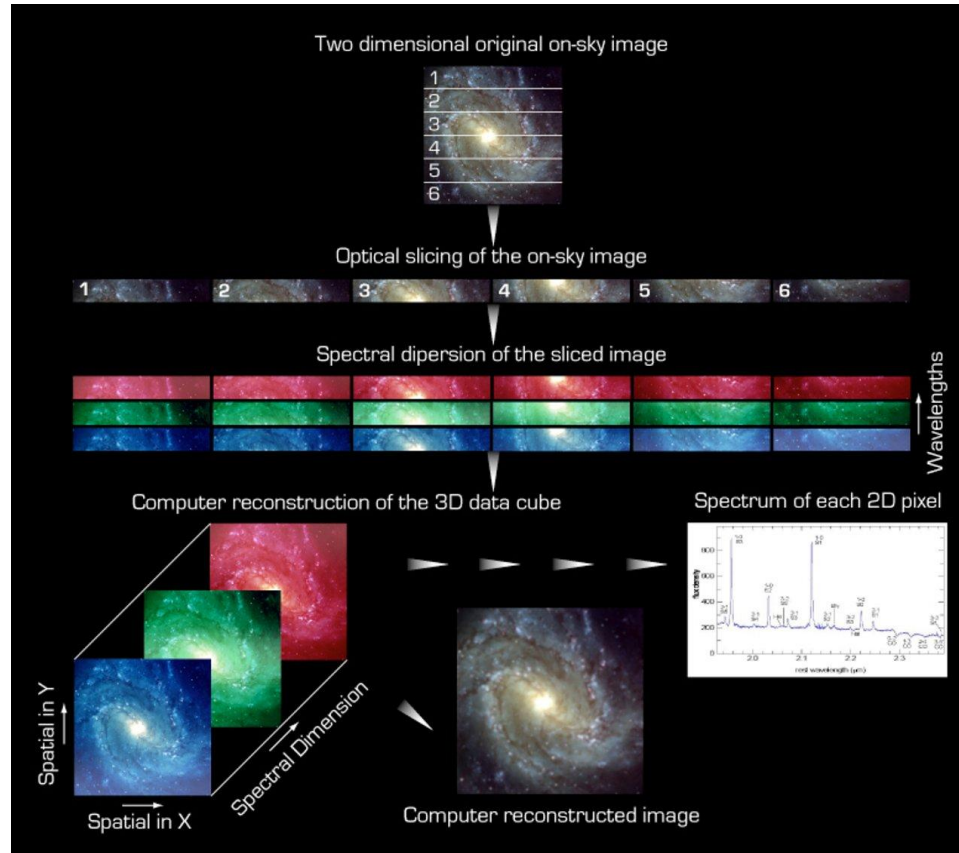
# What if we want to obtain a spectrum of every point in an image?



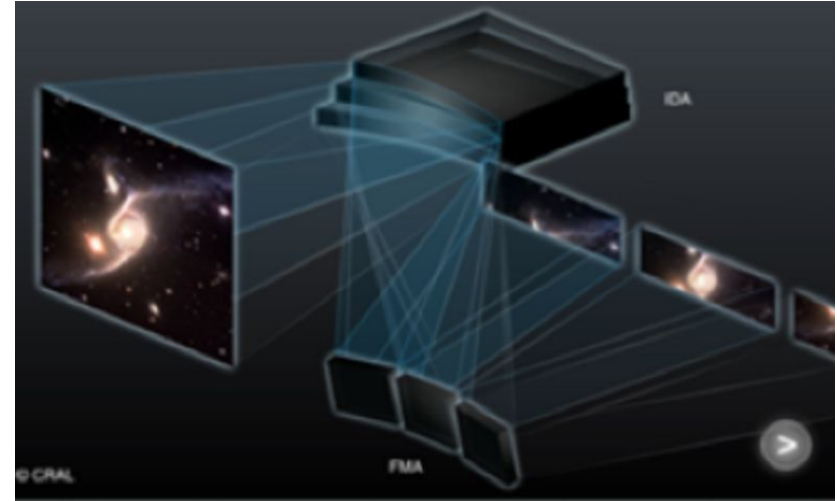
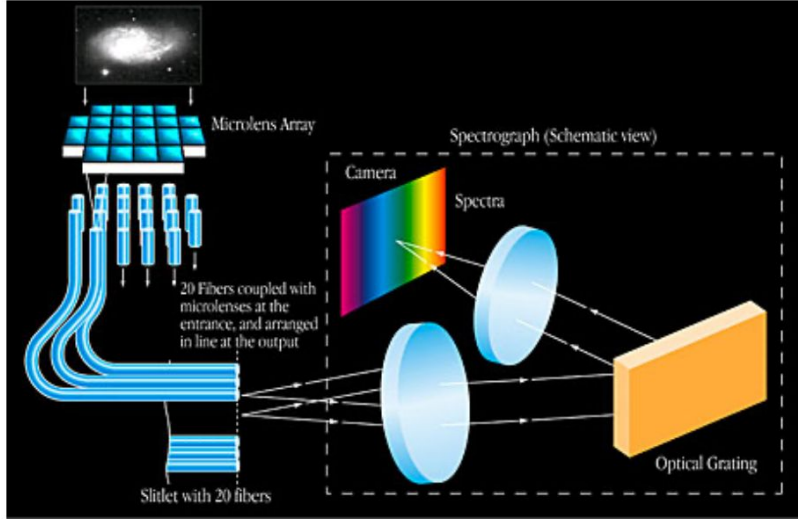
Slitless spectroscopy, powerful but not ideal!



# The concept of Integral field spectroscopy

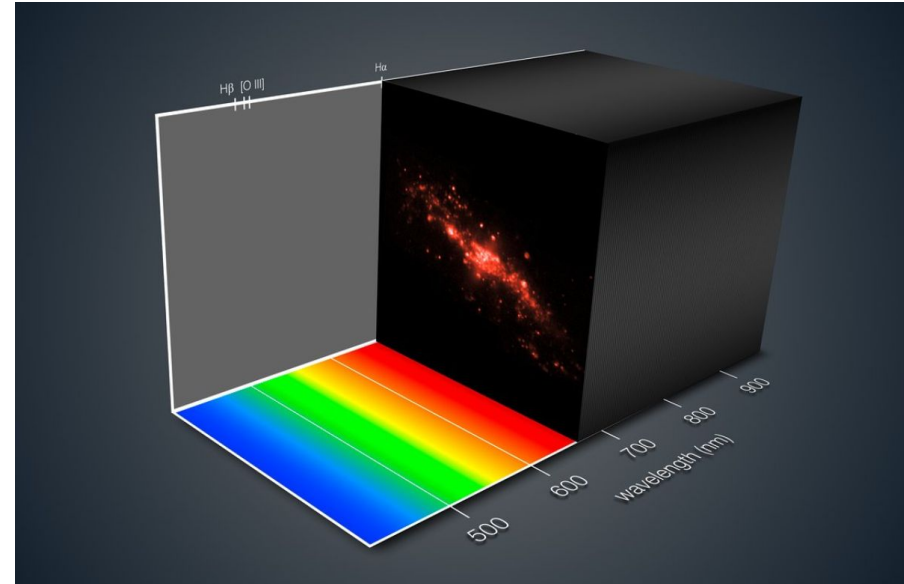
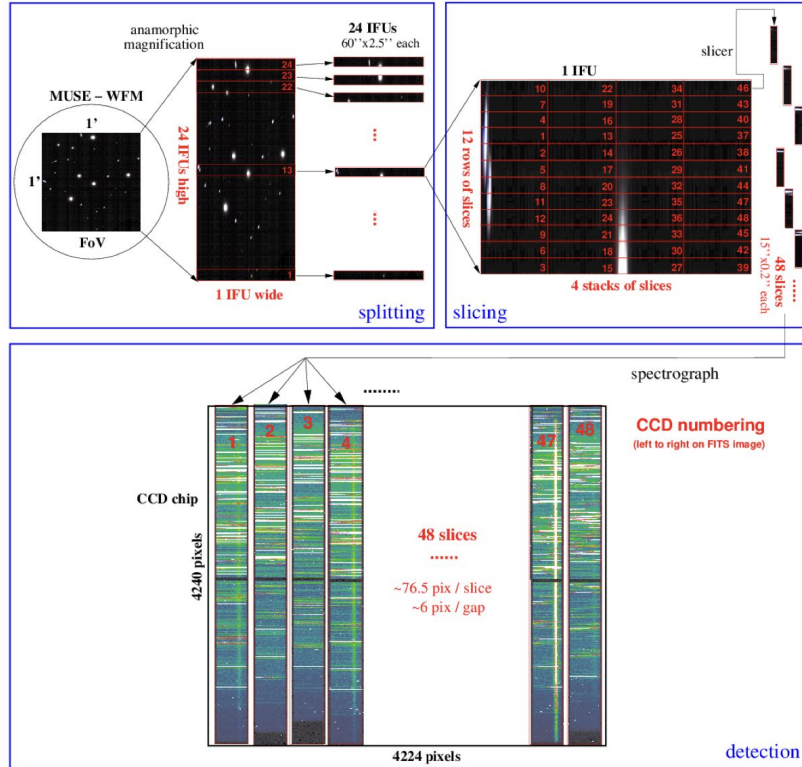


# The concept of Integral field spectroscopy



Optical fibers vs Image slicers

# The concept of Integral field spectroscopy



# The concept of Integral field spectroscopy

IFU data reduction requires a lot of computing resources. The basic idea is similar to the reduction of spectra we have seen but you need additional calibrations (e.g. wavelength, and 2 spatial axis geometry).

IFU is often used in Earth remote sensing as it provides spectral data for large areas on the Earth.

Let's explore a 3D datacube!

Data:

[https://drive.google.com/file/d/1u4BmHahRGgAQOnLxrj2F80ugFW8hanVM/view?usp=share\\_link](https://drive.google.com/file/d/1u4BmHahRGgAQOnLxrj2F80ugFW8hanVM/view?usp=share_link)

Visualization Codes:

<https://sites.google.com/cfa.harvard.edu/saoimageds9/download>

<https://www.mpe.mpg.de/~ott/QFitsView/>

