

Next generation compact spectro-imagers for Universe and Earth Observation

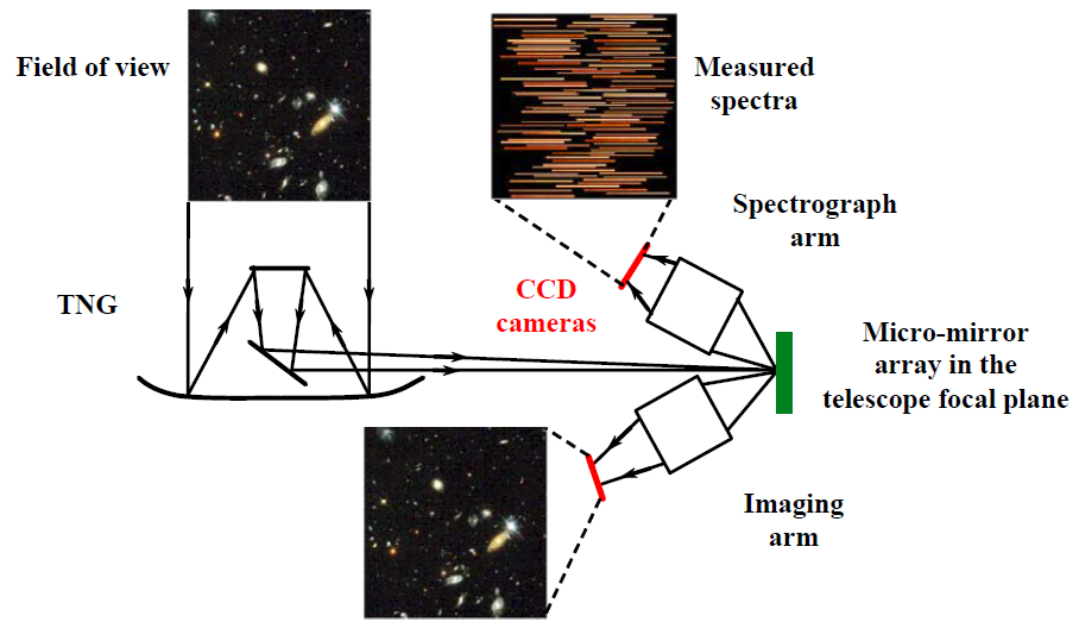
Mathieu Vachey

PhD Director :
Frédéric Zamkotsian

30/11/2017

BATMAN

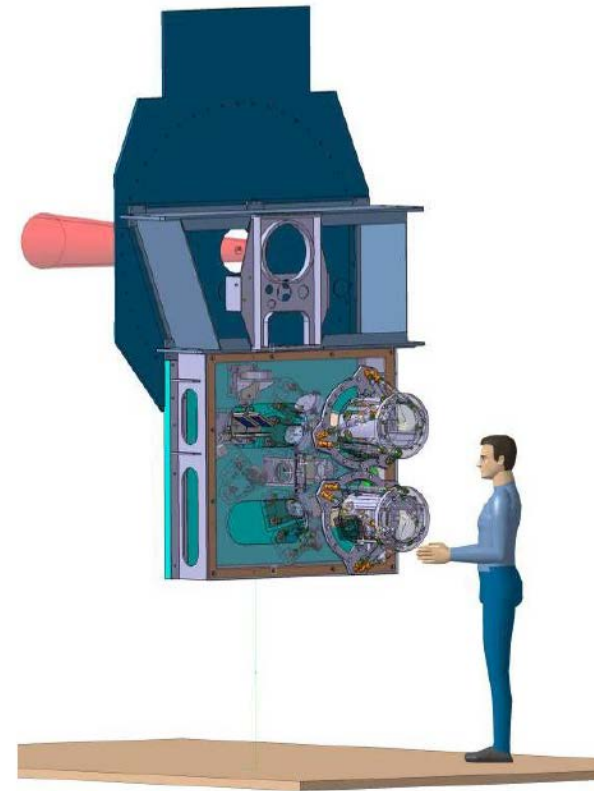
- Goal : Universe and Earth Observation
- Multi-Object Spectroscopy / Imagery



Principle of the BATMAN spectro-imager

BATMAN

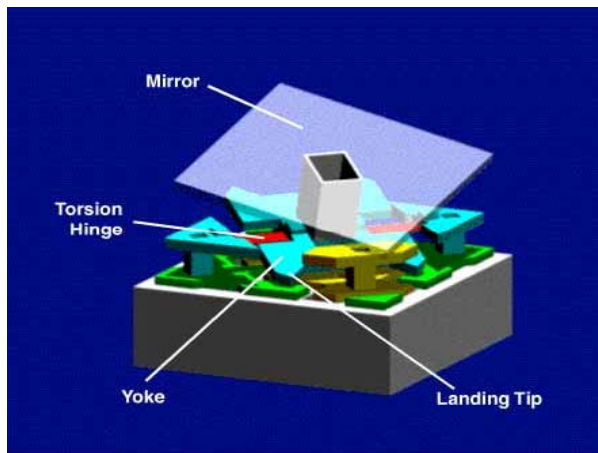
- BATMAN currently under construction
- To be mounted on the TNG by the end of 2018
- Integration of BATMAN (optical performance)



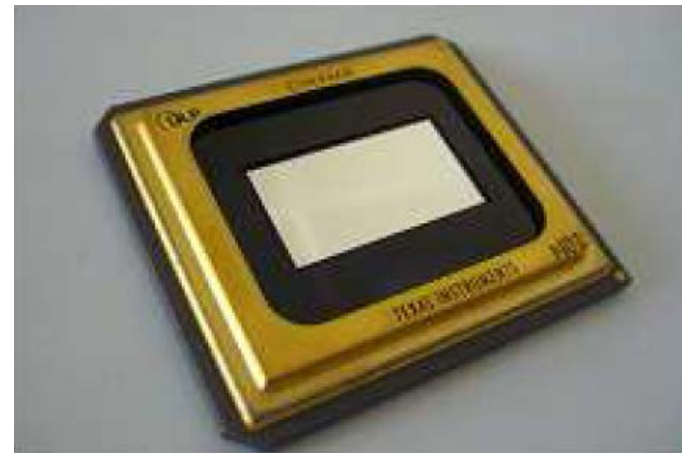
BATMAN opto-mechanical design

The use of MOEMS

- MOEMS: Micro-Opto-Electro-Mechanical Systems
- Object selection / Wavefront shaping
- Advantages: efficient, compact, programmable, specific task customization...



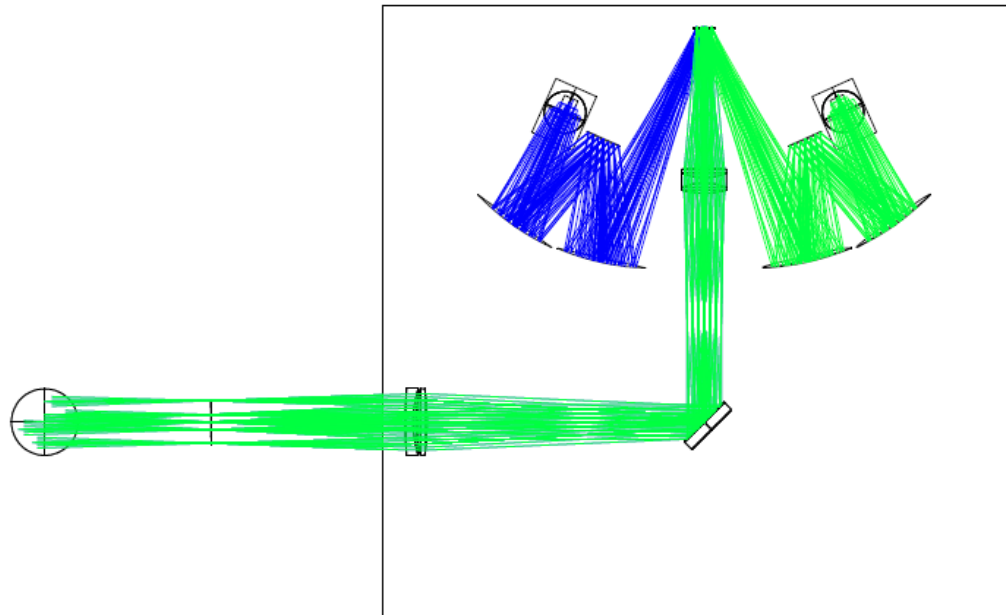
Micromirror schematic view



Digital Micromirror Device (DMD,
Texas Instruments)

My PhD work

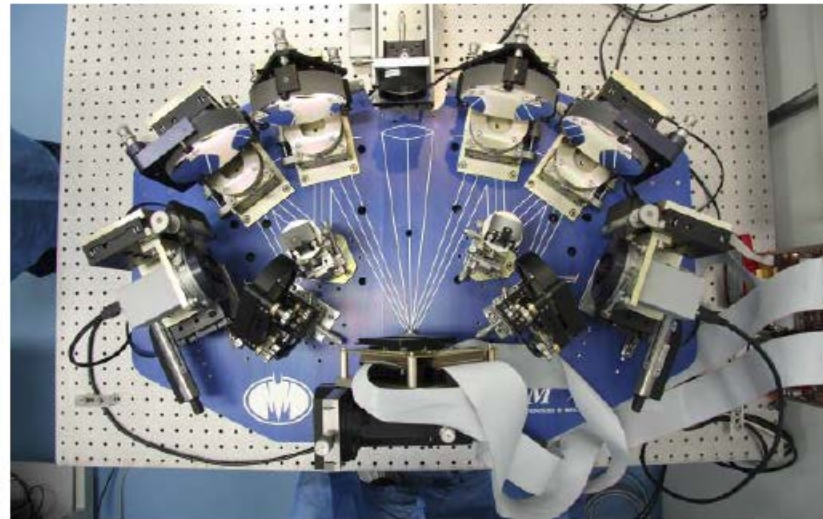
- Instrument design / optical design
- Universe Observation (BATMAN-like instruments) and Earth Observation (example: cloud removal)



Optical layout of BATMAN (incoming light at the left)

My PhD work

- BATMAN-like concept / design for space
- End-to-end spectro-photometric model
- Concept demonstration



ROBIN, the BATMAN demonstrator

Thank you for your attention!

