

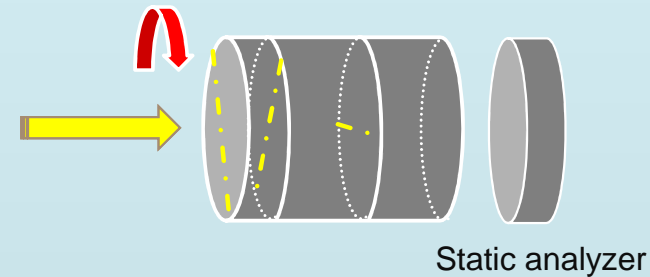
On-going R&D programs at CNES for Pollux

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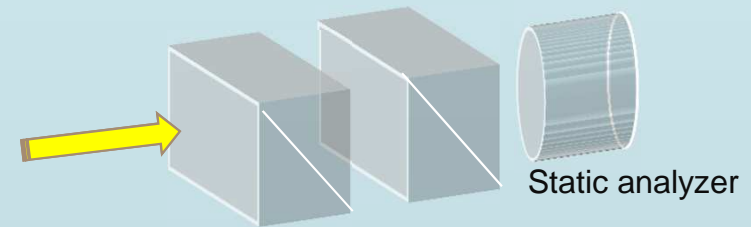
- ▶ UV polarimeters for POLLUX
- ▶ UV coatings for POLLUX

▶ **3 potential concepts for POLLUX**

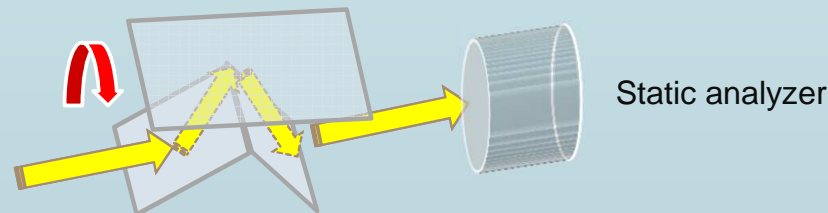
- ▶ Rotating plates (temporal modulation)



- ▶ Static wedges (spatial modulation)



- ▶ 3-mirrors configuration (temporal modulation)



▶ **Previous R&D program at CNES (2012-2016)**

- ▶ Test of the two first concepts in the VIS domain at LESIA
- ▶ Good results (see M. Pertenais PhD thesis) for both rotating plates and static wedges (MgF₂ prototypes)

	Rotating plates (temporal modulation)	Static wedges (spatial modulation)
Accuracy (VIS)	10^{-4}	10^{-2}
Sensitivity (VIS)	10^{-3}	10^{-2}
TRL	4	3
FUV transmission	10 %	10 %
Advantages	High performances	<ul style="list-style-type: none"> • Static • Single shot
Drawbacks	<ul style="list-style-type: none"> • Moving parts • Multiple shots • Polarized fringes 	<ul style="list-style-type: none"> • Need for large detectors with high dynamics • Low TRL • Sensitivity to the environment
Common key points	<ul style="list-style-type: none"> • UV transmission • Assembling technologies (glue, optical contact, ...) 	

Rotating plates concept proposed for Arago mission (higher TRL)

- ▶ Next step : test these polarimeters in the UV !
- ▶ 2017 R&D objectives :
 - ▶ Adapt the existing rotating plates and static wedges prototypes to vacuum environment
 - ▶ Test these two concepts within the UV spectrograph at Observatoire de Meudon
 - ▶ Optional part (depending on parallel studies at IRAP) :
 - ▶ Design a 3-mirrors prototype and test it, first in the VIS domain, then in the UV
 - ▶ Identify a solution compatible with POLLUX requirements
- ▶ R&D program starting right now at LESIA ...
- ▶ ... but looking for a partner to co-fund a new PhD student

- ▶ **Technological studies of UV coatings for [80 nm; 300 nm]**
 - ▶ Dichroïcs
 - ▶ Reflective coatings
 - ▶ Anti-reflection coatings

- ▶ **To be adressed :**
 - ▶ Choice of substrates and materials
 - ▶ Impact on polarization state
 - ▶ Sensitivity to contamination

- ▶ **Manufacturers not yet identified (... but very few)**

- ▶ **Beginning of this program : september of 2017**

Thank you for your attention