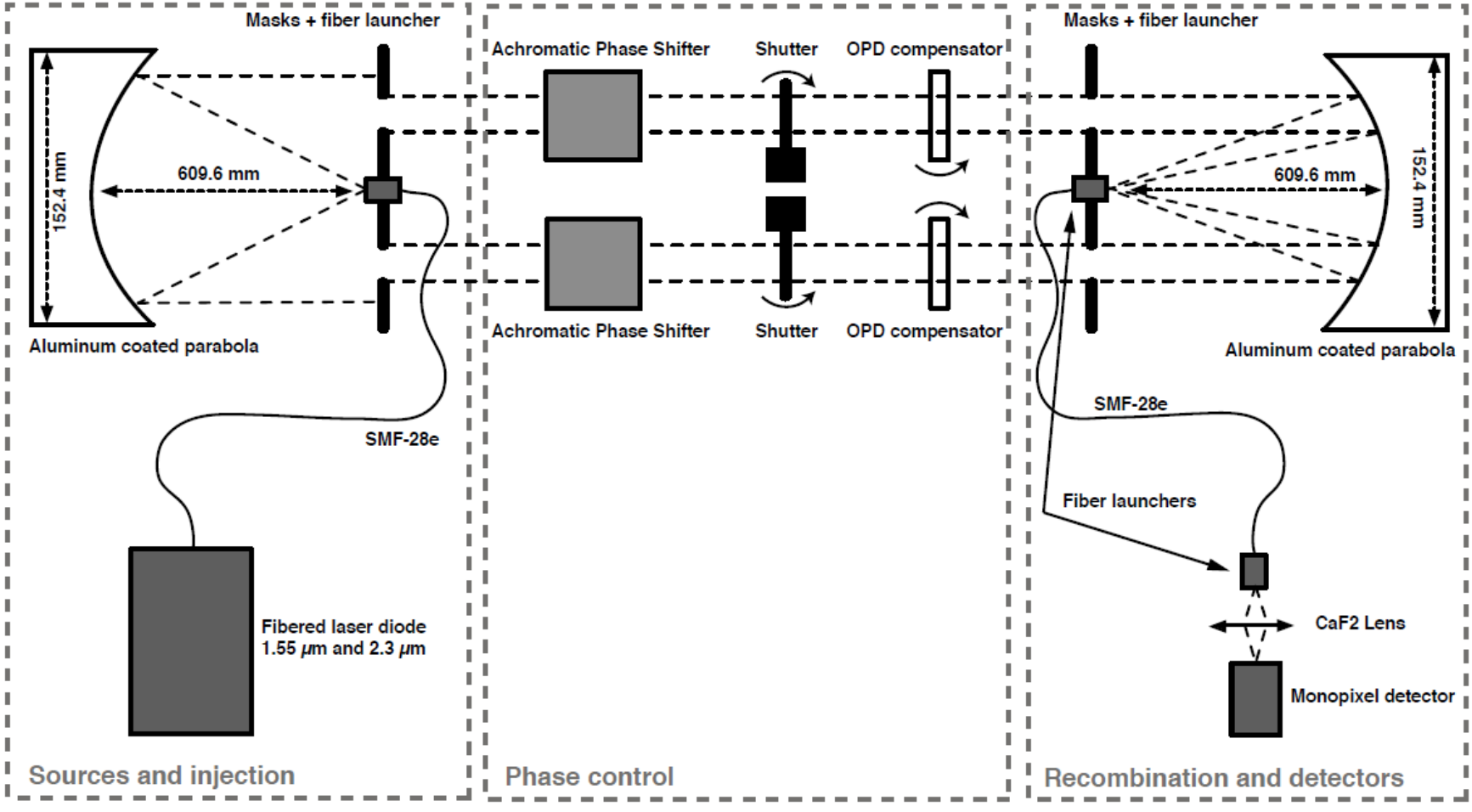
Nulling interferometry @ ULg

- 10-year experience
  - Design: Darwin, GENIE, ALADDIN, Pegase, FKSI
    - PhD theses of Absil, Mawet, Defrère, Hanot
  - Exploitation: PFN, Keck Nuller, (LBTI)
    - Collaboration with JPL (Mennesson, Serabyn) and UA (Hinz)
- Fields of expertise
  - Design, performance simulations
  - Achromatic phase shifters (Fresnel rhombs)
  - Data reduction: statistical method (Hanot et al. 2011)
  - Scientific exploitation
  - Optical test bench

CELINE: a nulling testbench @ ULg

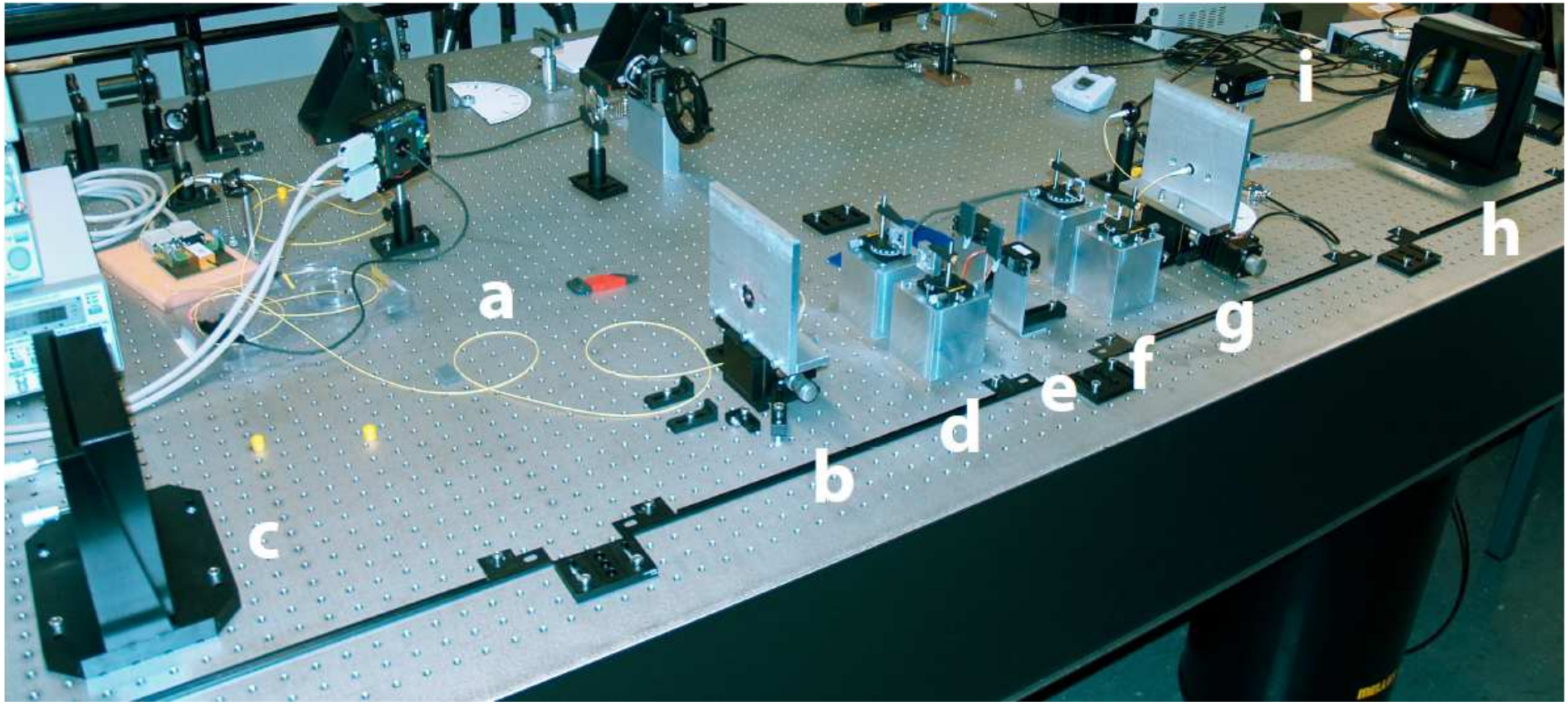
- Main goals
  - Develop and test new technologies
    - Achromatic phase shifters
    - New types of single-mode fibers (?)
  - Improved near-infrared broadband nulling
  - Eventually: on-sky applications
    - PFN-type science, possibly extended to L band
- Main design drivers
  - Fiber-based beam combination (à la PFN)
  - Simple and versatile
  - Fully reflective, fully symmetric

CELINE: a nulling testbench @ ULg



CELINE: a nulling testbench @ ULg

- Need more compact version to hit sky
  - Contacts taken with OCA/c2pu (1m telescope)



CELINE: current status

- Bench fully functional
  - Measured monochromatic nulls ~ 1e-4 (@1.55µm)
- Next steps
  - Polychromatic operations
  - Stabilization of the null
    - Active control of 3-axis fiber mount … fringe tracking?
  - Extension to the L band
- Main problem: manpower
  - Hanot left ULg → currently only 1 master student
  - No academic staff / engineer available

Interactions with PERSEE?

- Implement PERSEE-type active control on CELINE
  - 1 master student currently working on this
  - Useful when going on sky
- Test statistical data reduction on PERSEE data
  - 1 master student available until April 2013 for this task
- Interest in future PERSEE applications
  - Try nulling techniques on CHARA/FLUOR?
- Caveat: ULg understaffed
  - No major contribution expected before 09/2013