Company Profile and Advanced Technologies

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ADAPTICA

mission

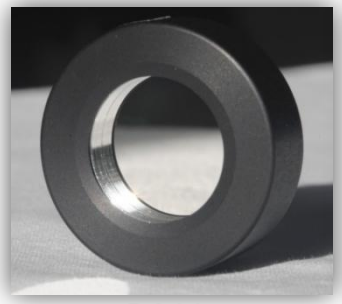
Through the use of the most modern optical, mechanical and electronic technologies ADAPTICA develops embedded adaptive optics systems with characteristics of size and cost that makes them easily fit into existing optical systems or in course of design.

Adaptica brings the deformable mirror technology from scientific applications to the world of industry, biomedical applications and cultural heritage diagnostic.

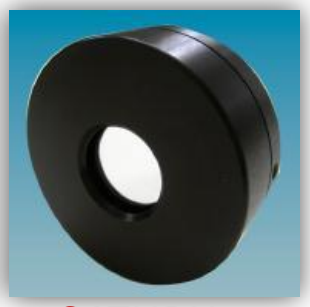
Adaptica's core technologies

Innovate existing applications
Improve the performances
Create new applications

Adaptica' s COS Product Lines

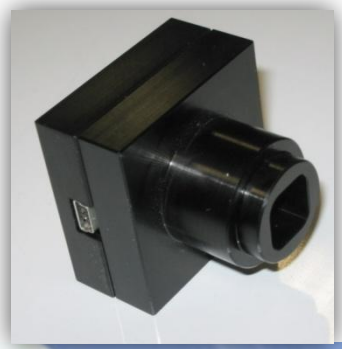


PAN



SATURN

EUROPA

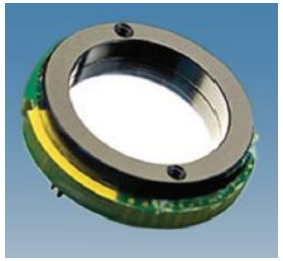


MERCURY

- Deformable Mirrors (DM)
  - RHEA: Single Actuator Piezoelectric
  - PAN: Pull Membrane
  - SATURN: Push Pull Membrane
- Embedded Adaptive Optics Systems
  - EUROPA: Basic System
  - GANYMEDE: Closed Loop – Standard Applications
- Embedded High Voltage Driver
  - IO64/32: multichannel embedded control system
  - IO32A: multichannel analog control driver
- Wavefront Sensor
  - MERCURY: Shack Hartmann WFS
  - MMOS: SDK in Matlab
- LCD-based Products
  - CHARON: SLM - Spatial Light Modulator
- AO KITs & Demos
  - Didaptica: AO kit for universities and R&D division

Recently added COS Products

[1 Ref] - Distributed actuators deformable mirror for adaptive optics, Bonora, Optics Communications 284 (2011) 3467–3473

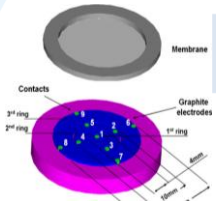


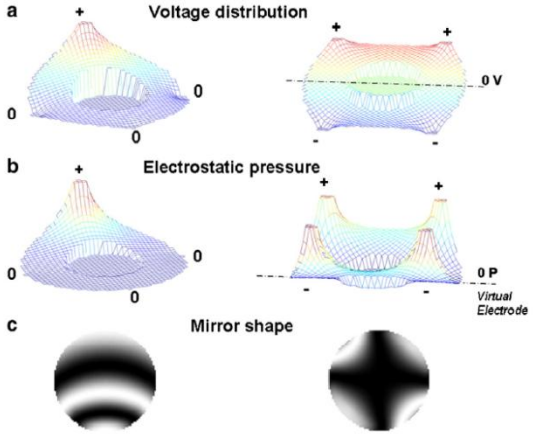
MIMAS

SPECIFICATIONS

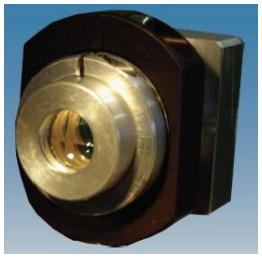
- **Number of voltage point: 9**
- Active area diameter 10 mm (custom on request)
- Control voltage: +/- 150 V
- Coating: Ag, Al, Au

- Defocus = +/- 6 waves
- Astigmatism = 3 waves
- Coma = +/- 1 wave
- Spherical aberration: +/-3 waves





OBERON



Technical Specifications:

- **Camera type: CCD**
- **Camera interface: Firewire**
- **Nominal Pixel Size: 10um**
- **Max. fps in free run mode: 25**
- **4 pupil splitting glass pyramid prism**
- **Objective lens focal length = 11 mm**
- **Max spot diameter on pyramid vertex: 5mm**
- **Pyramid vertex accuracy: 50um**
- **Entrance f/#=5.5**
- **Exit pupit aperture 1.8 mm**
- **Exit pupil pixel aperture: 180 pixels**
- **Max recovered Zernike terms: > 30**

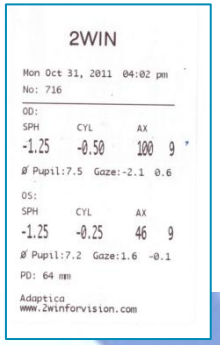
Key Applications

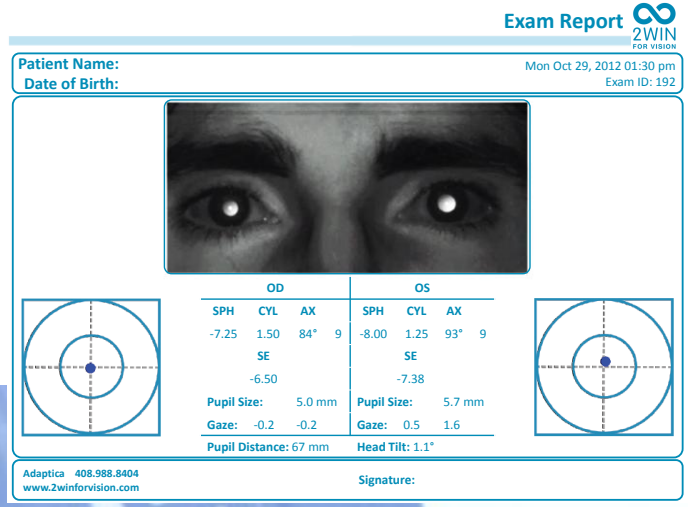
- **Beam diagnostic**
- **Industrial inspection optimization**
- **Image enhancements**
- **Close loop sensor for adaptive optics**

Pyramid wavefront sensor for laboratory applications

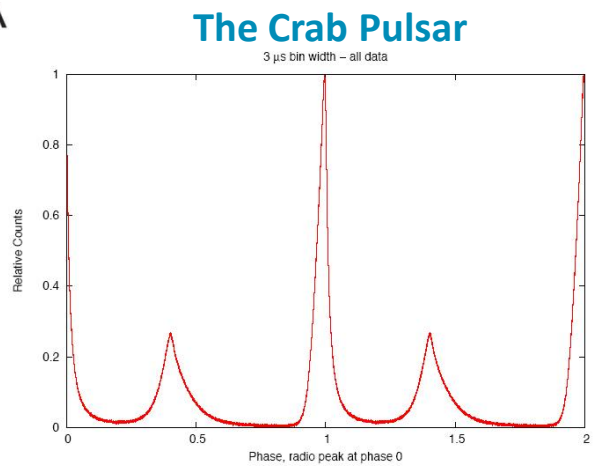
First Vertical Product – 2WIN

- Binocular REFRACTOMETER
- It measure DEFOCUS and ASTIGMATISM of both eyes in binocular mode

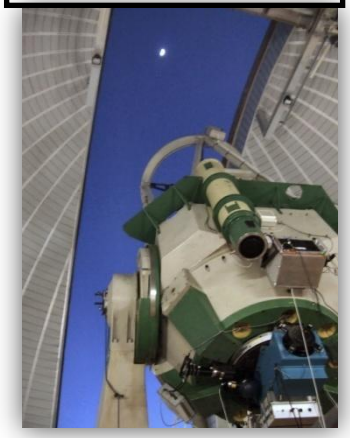




Advanced Technologies



Asiago 1.8 m



NTT - 2011

- We are working on:
  - Photocontrolled DM
  - DM for ultra high ultra short lasers
  - DM for fundus cameras
  - DM for AQuEYE: quantum astronomy instrument at the 1.8 m Asiago Telescope
  - Deformable lenses

» Stefano Bonora ->

Thank you

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