

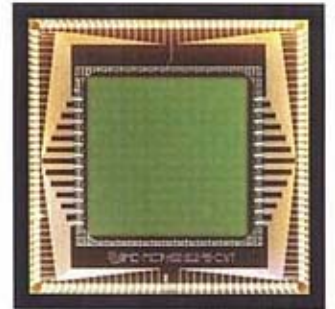
デフォーマブルミラーの構造について

Boston Micromachines' deformable mirrors are advanced wavefront control devices consisting of a mirror membrane supported by an underlying actuator array. Each actuator in the array can be individually deflected by electrostatic actuation to achieve the desired pattern of deformation.

Advantages of Boston Micromachines' Deformable Mirrors

- Highly reflective metallic coating (Gold or Aluminum)
- No hysteresis
- Less than 5 nm repeatability
- Response time down to 45 μ s
- Device lifetime >1 billion cycles at $\frac{1}{2}$ full stroke
- Low power consumption

The **Continuous Deformable Mirror** has a continuous mirror membrane, while the **Segmented Deformable Mirror** (Spatial Light Modulator) has a segmented mirror membrane that provides for decoupled actuator deflection.



Segmented Deformable Mirror (SDM)

A segmented membrane allows for decoupled deformation of the actuator array. A deflected actuator deforms one mirror pixel only and has no influence on its neighbors.



An array of electrostatic parallel-plate actuators is directly coupled with square mirror pixels by mechanical posts.

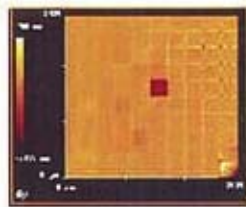


Image of a single mirror pixel deformed by its corresponding actuator

SDM Applications

- Long Range Laser Communication
- Active Optics
- Optical Correlation
- Holographic Encryption
- Pattern/Face Recognition
- Identification Systems
- Machine Vision

Continuous Deformable Mirror (CDM)

A continuous membrane results in a smooth, graduated deformation of the membrane. A deflected actuator will influence the membrane over neighboring actuators by ~15%.



An array of electrostatic parallel-plate actuators is directly coupled with a continuous mirror membrane by mechanical posts

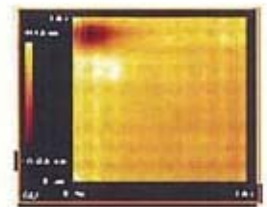


Image of the deformation caused by a single deflected actuator across a continuous mirror membrane

CDM Applications

- Adaptive Optics
 - Astronomical Imaging
 - Microscopy
 - Tracking
- Scanning Laser Ophthalmoscope
- Optical Coherence Tomography
- Phoropter
- LASIK surgery diagnostic
- Beam Forming
 - Laser Cutting/Welding
 - Laser Communication
- Laser Cavity Compensation

