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Ultrafast Excimer Laser for Transepithelial Customized PRK

G Alessio

Topography



Corneal Morphology

Pupillometer



**Photopic and Scotopic
pupillary dynamics**

Surgeon



**Determination of
Refraction**

**Laser
Refractometer**



Objective Refraction

CIPTA Software



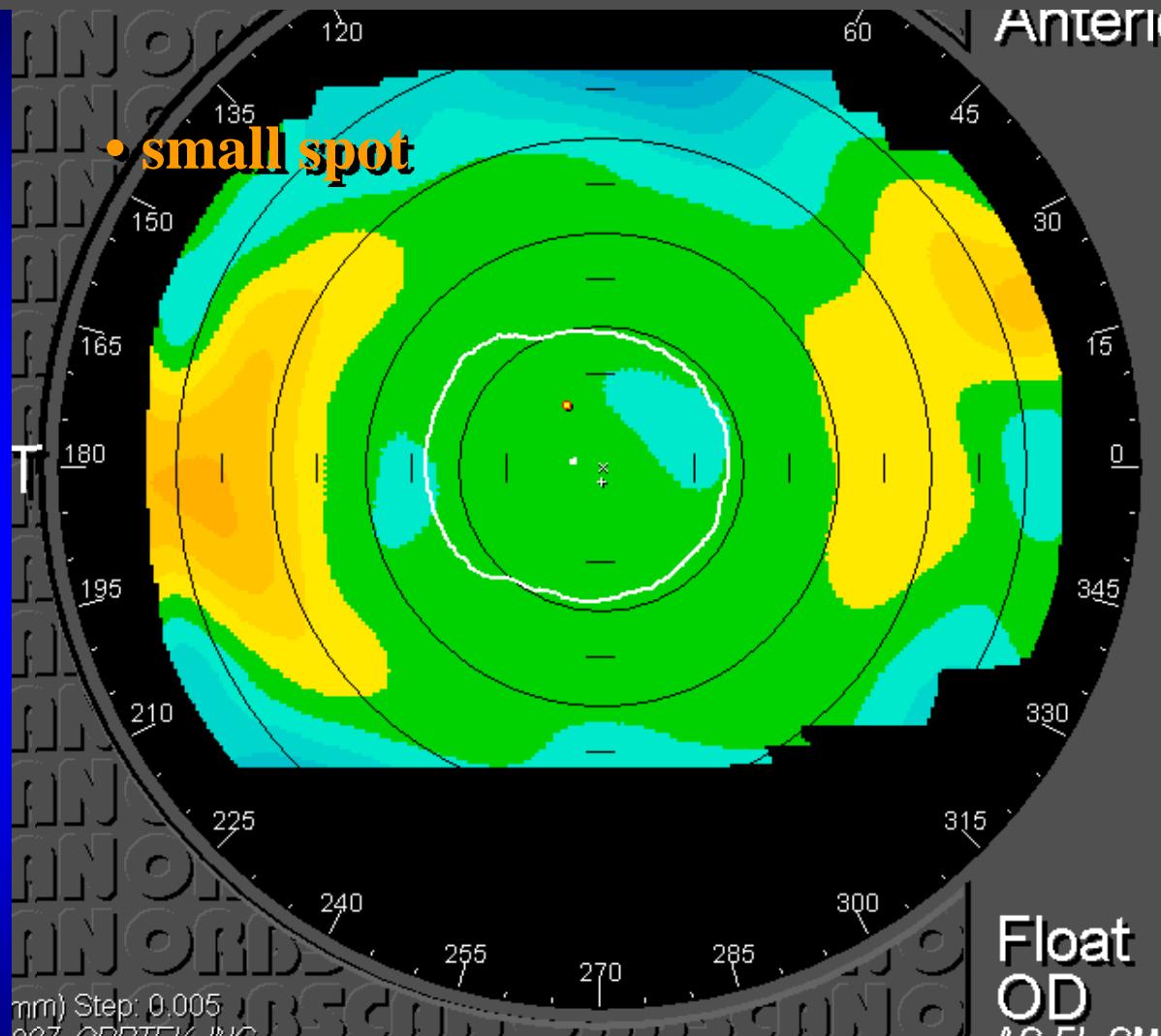
Planning the ablation profile

Excimer Laser

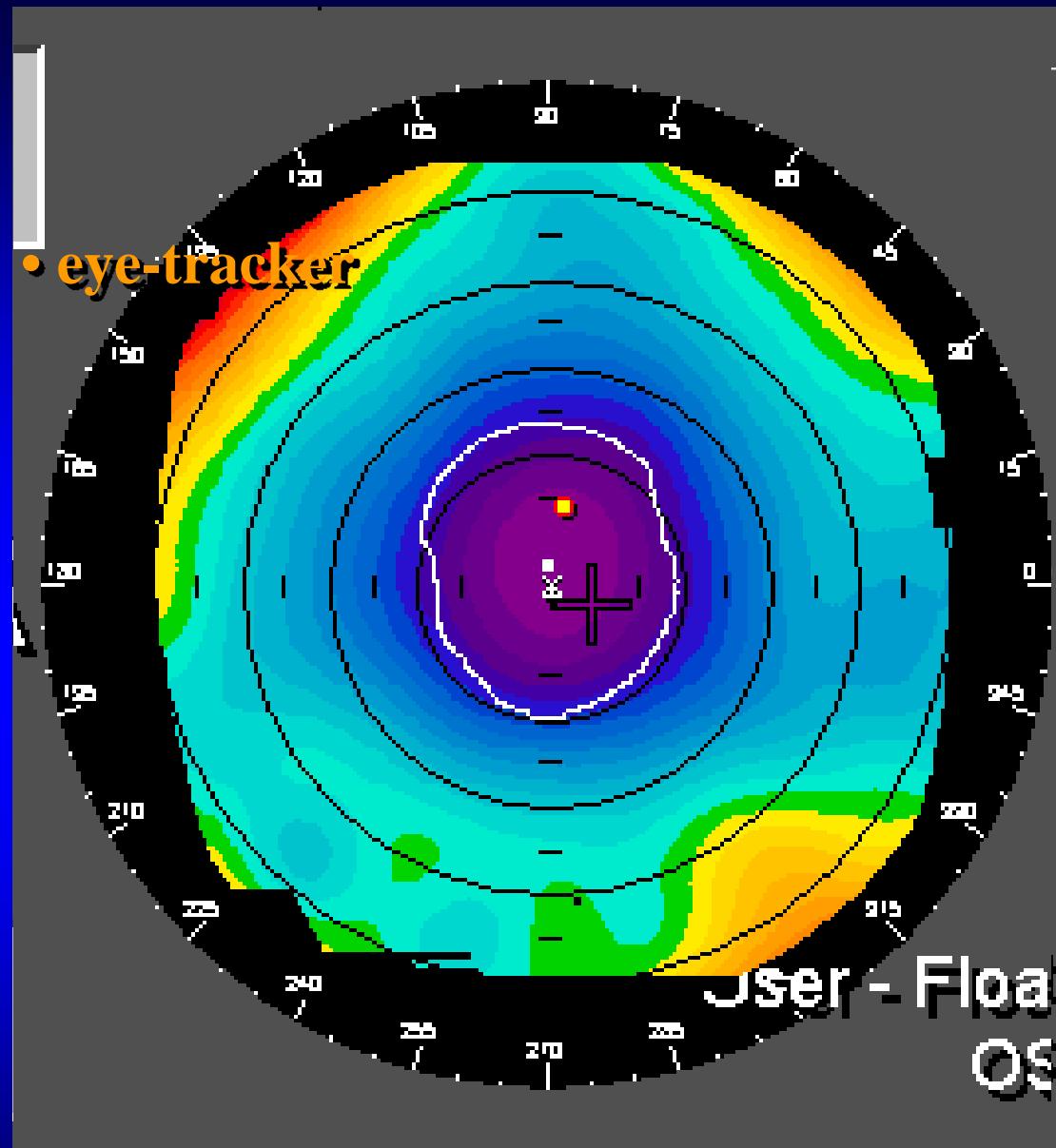


**Realization of the planned
ablation profile**

CUSTOMIZED ABLATION



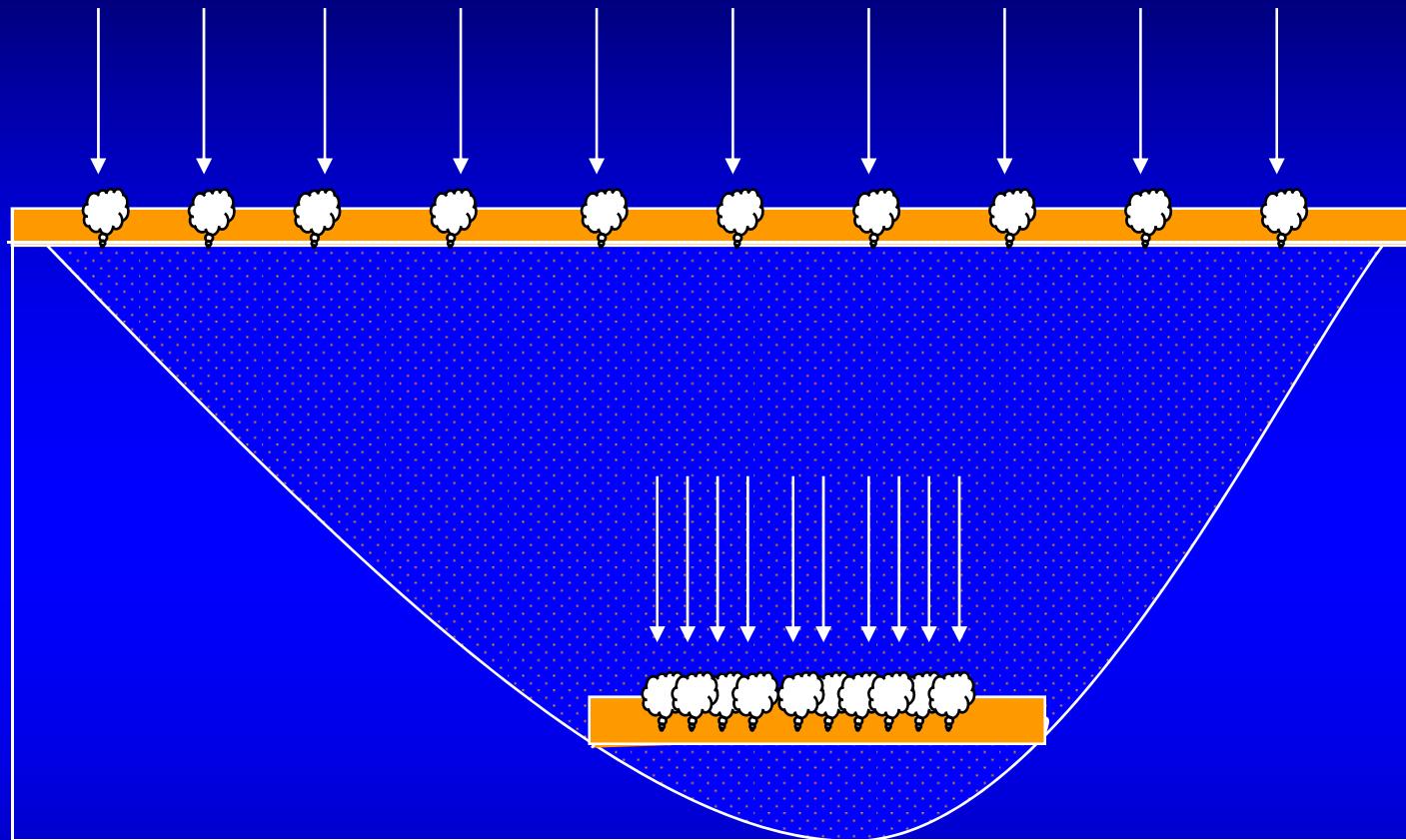
G Alessio, MD; F Boscia, MD; MG La Tegola, MD; C Sborgia, MD. *Topography-driven Excimer Laser for the retreatment of decentralized myopic photorefractive keratectomy*. *Ophthalmology* 2001; 108:1695-703.



G Alessio, MD; F Boscia, MD; MG La Tegola, MD; C Sborgia, MD. Corneal Interactive Programmed Topographic Ablation Customized Photorefractive Keratectomy for correction of post-keratoplasty astigmatism. *Ophthalmology* 2001; 108:2029-37.

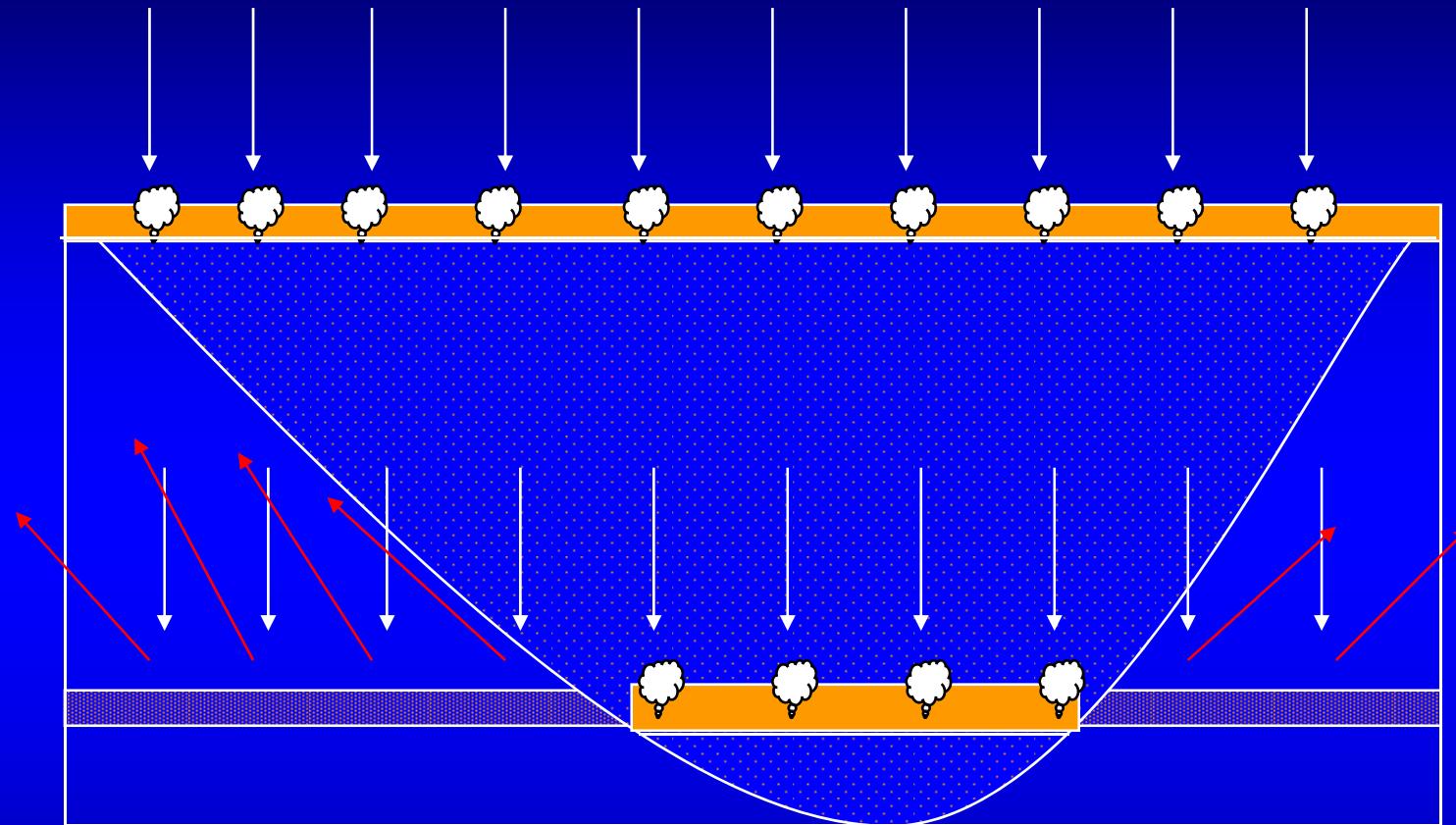
A constant ablation rate on every corneal layer ensures the precision of the ablation.

The only way to obtain a constant ablation rate on every layer is to have a constant repetition rate on cornea



Laserhead: 200Hz

Cornea: 1Hz / 9mm
50HZ / 1mm



Laserhead: 1000Hz
Cornea: 5Hz /9mm
5HZ /1mm

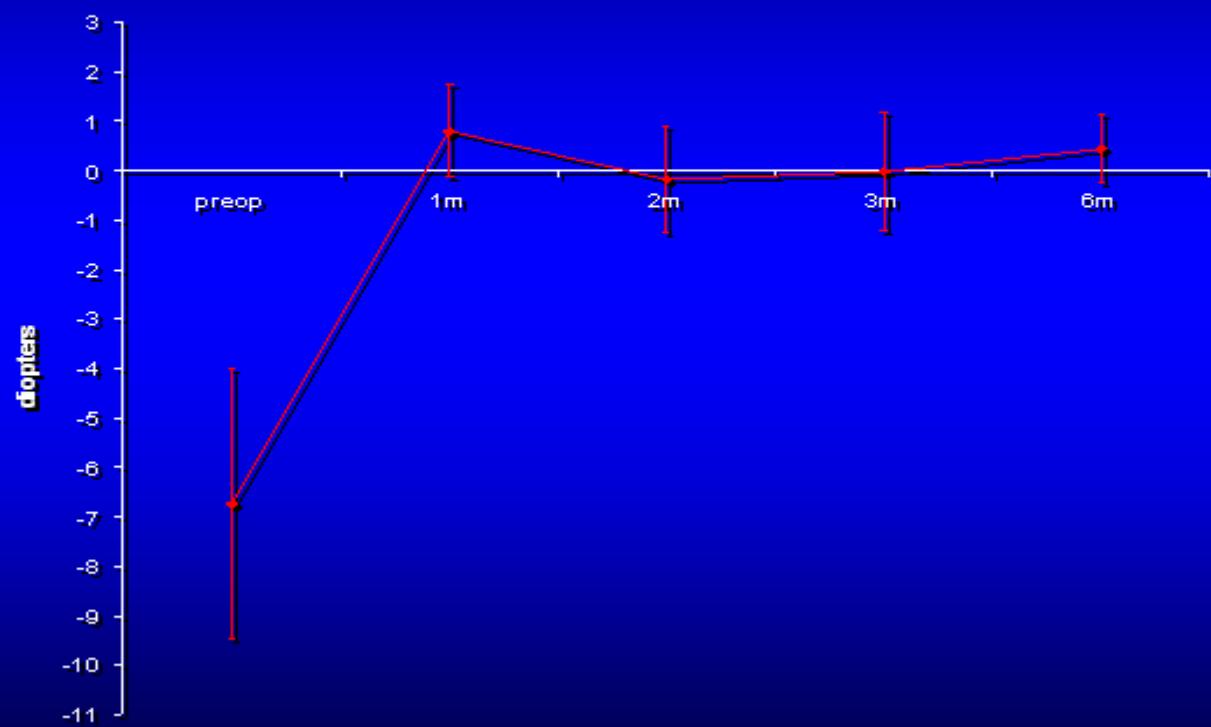
PATIENT DEMOGRAPHIC

- **110 eyes**
- mean age: **33,6 years** (range: **20-47; SD, 7,9**)
- mean SE:**-6.73D** (range: **-1.75 to -9; SD, 2.7**)
- **follow-up: 1-6 months**
- **4 retreatments (irregular astigmatism post myopic PRK)**

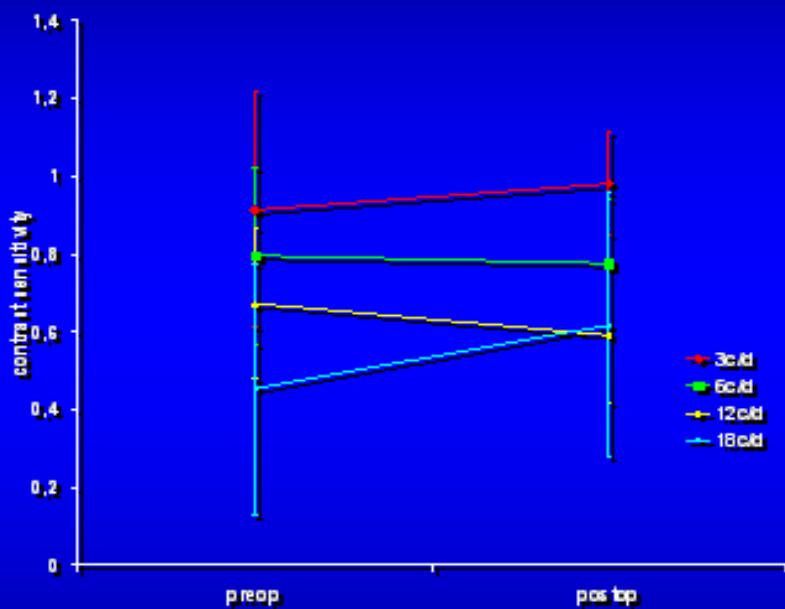
METHODS

- **Customized topographic PRK (CIPTA)**
- **Transepithelial treatment**
- **Orbscan Topography**
- **Accuscan Excimer Laser (flying-spot 650μ; 1000Hz)**

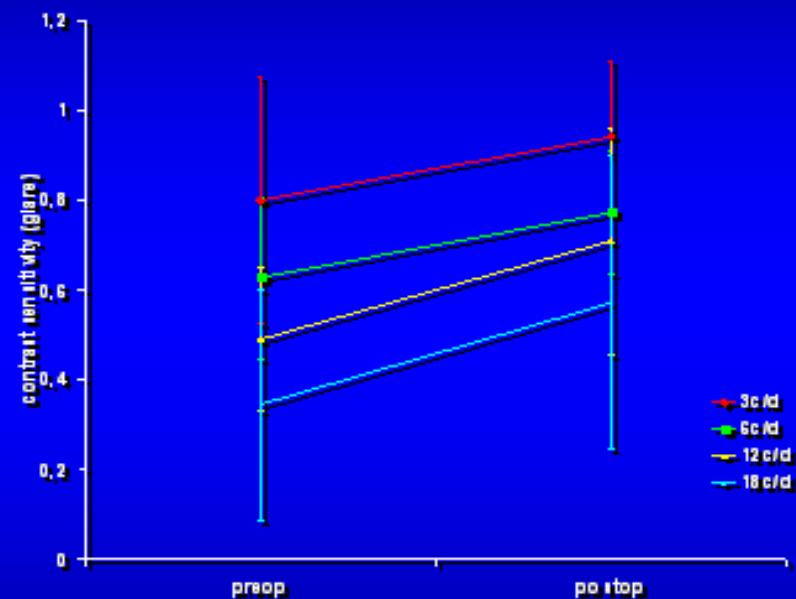
CHANGE IN SPHERICAL EQUIVALENT



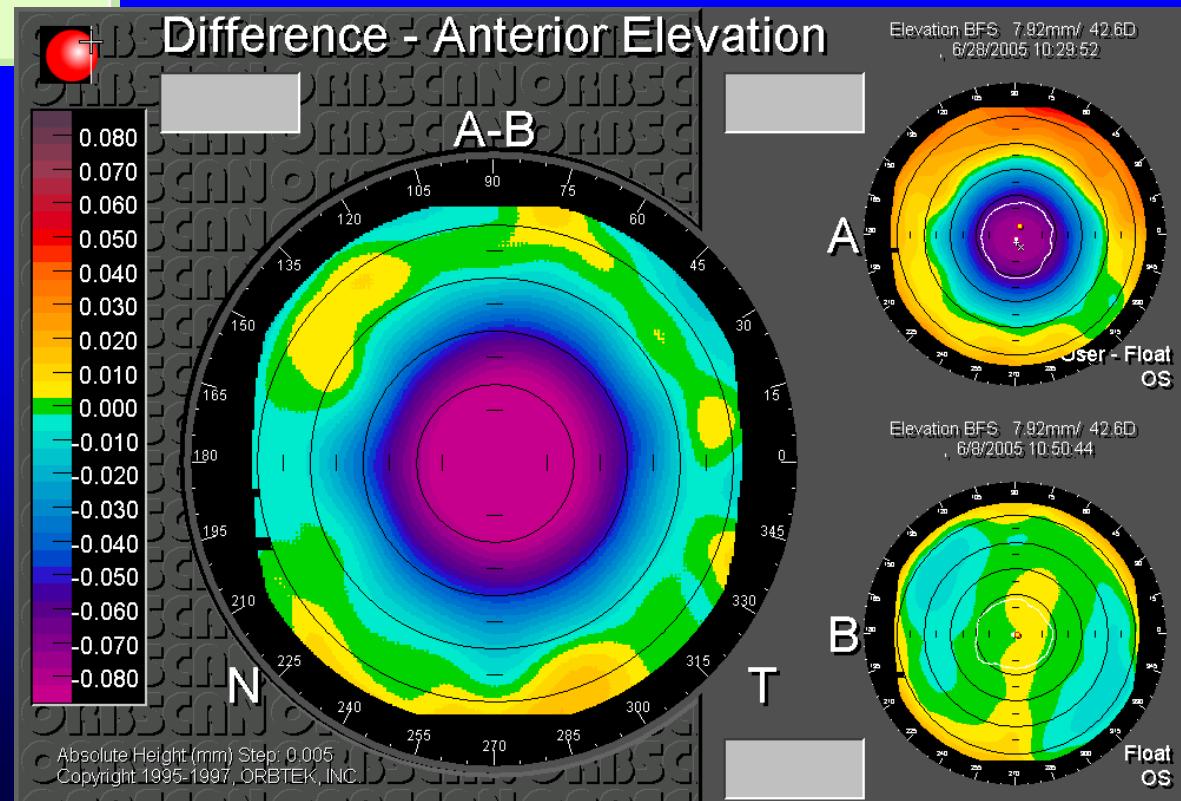
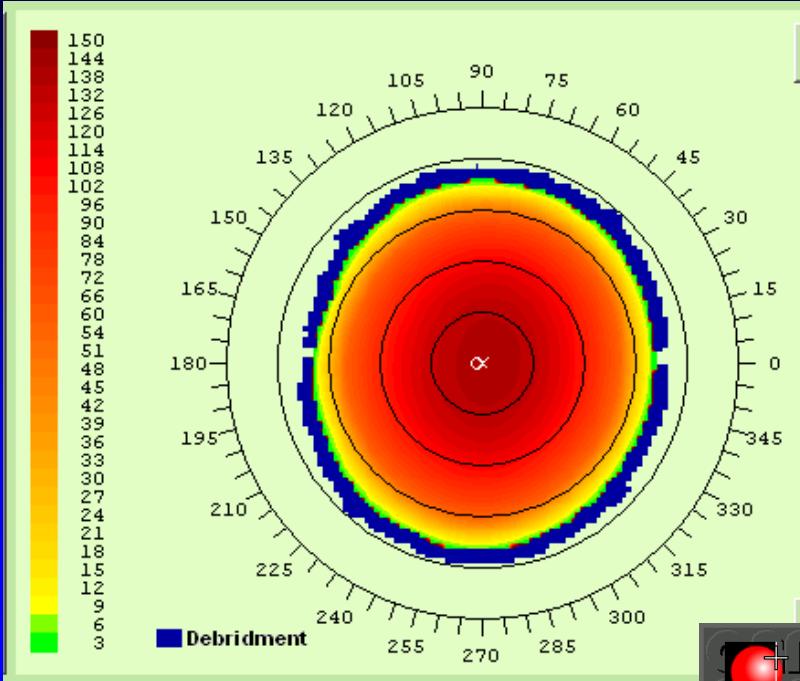
CONTRAST SENSITIVITY (CSV 1000)



no glare



glare



CONCLUSIONS

- < time
- > patient compliance
- small spot
- autocalibration
- eye-tracker
- constant repetition rate on cornea
- > precision *especially for customized ablation*