Why choose the iTrace?

With so many options on the market, how does one know which aberrometry device will be the best choice? To answer this question, we need to look more closely at the **technologies** driving these devices.

The iTrace uses the principle of Ray Tracing, through patented technology. The iTrace rapidly projects **256** sequential, parallel thin laser light beams through the **complete entrance pupil** within milliseconds. Charting the precise position where each of the beams land on the retina, the iTrace integrates these retinal spot positions to measure overall visual performance.

With patented technology, the iTrace can measure **true bilateral open-field**, reducing or eliminating instrument accommodation whereas other aberrometers cannot offer open-field measurement. This feature is critical if you want to study **accommodation**.

Let's look at each of the differences:

iTrace vs. Hartmann-Shack

- HS systems **analyze wavefront with <u>one</u> InfraRed light beam as it passes back** from the retina through the entrance pupil to a set of lenslets and is captured with a CCD camera. Because the light beam passes through the optical system at one moment, highly aberrated eyes can cause a "crossover" effect. This means that the software cannot recognize the origin of the spot and will produce inaccurate results.

  Due to the **sequential** scanning of the 256 light beams, the iTrace is **more accurate than the HS systems** in measuring **highly aberrated eyes**, because it does not suffer from the "crossover" effect that causes the data confusion in HS systems.

- The **iTrace has complete pupil coverage** because the scan adjusts to fit pupils from 2.5mm up to 8mm, whereas the HS systems will truncate data.

- The **iTrace can measure through scars, opacities, trauma, spectacles, and contact lenses** without causing erroneous data. If one beam is blocked, the other 255 beams cover the pupil. Because HS systems send only <u>one</u> beam through, central scars and other opacities cause error through "crossover" across the whole measurement area.

iTrace vs. Differential Skiascopy

- Differential Skiascopy (DS) systems use automated streak retinoscopy at 360 meridians with a **central camera** recording the measurement.

- The iTrace has **complete pupil coverage**, whereas the DS systems must **interpolate** central data because the rotating camera resides within the central 2mm, and **extrapolate** data in the periphery beyond 6mm because the streak is only 6mm wide.

Ray Tracing differs from other methods for measuring aberrometry like Hartmann-Shack-based systems and Differential Skiaskopy. These technologies, by the nature of the data gathering method, are inaccurate when measuring challenging eyes (those eyes you most need to measure) or miss essential central and peripheral data.

iTrace™

COMBINATION RAY TRACING ABERROMETER/TOPOGRAPHER

www.traceytechnologies.com