Least-squares fitting of Hartmann or Shack–Hartmann data with a circular array of sampling points

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Abstract.

A least-squares procedure to find the tilts, curvature, astigmatism, coma, and triangular astigmatism by means of measurements of the transverse aberrations using a Hartmann or Shack–Hartmann test is described. The sampling points are distributed in a ring centered on the pupil of the optical system. The properties and characteristics of rings with three, four, five, six, or more sampling points are analyzed with more detail and better mathematical analysis than in previous publications.