
Lens tolerances calculation for a thermal imaging system

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The design and development of optical systems is a long, time-consuming and always creative process. At each stage of the design and analysis the designer must keep his eye on the process, so that the optical system met all the requirements placed upon it. Errors in the optical systems for manufacturing and assembly cause for additional aberrations and low image quality. Calculation of tolerances for optical systems for the manufacturing and assembly purposes is an important task in the design of any optical device.

The article focuses on the development of the tolerances calculation method using ZEMAX software. This method was used as an example for calculation of thermal imager lens tolerance. Calculation by this method allowed to verify that the lens design is manufacturable, has a wide range of tolerances and shows desired image quality.

The described method is versatile and can be applied to any optical system with a given image quality criteria.

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