Registration

Further Training Seminar

Advanced Lens Design

16th – 19th September 2026 in Aalen

Binding registration online at www.photonicsbw.de

The participation fee is 1790,- €. For members of Photonics BW e.V. and for members of the other regional Innovation Networks Optical Technologies belonging to OptecNet Deutschland e.V. the participation fee is 1090,- €.

The fee includes the participation in the seminar, the training documents, lunch and dinner as well as coffee breaks and beverages in the seminar room. **Accommodation costs are not included.** We gladly reserve a room at **H+ Hotel Limes Thermen Aalen** (110,- € / night with breakfast).

After receipt of the registration, you will get a confirmation of your participation. The seminar is limited to **a maximum of 20 participants**.

Cancellations are accepted only in written form, cancellation fees: free of charge until **5th August 2026**. After that, the full participation fee is to be paid. If you are not able to attend the seminar, we gladly accept another participant. We reserve the right to cancel the seminar if the number of participants is too small. The seminar is subject to the terms and conditions of Photonics BW (www.photonicsbw.de/kontakt/agb).

Venue
H+ Hotel Limes Thermen Aalen
Osterbucher Platz 1
73431 Aalen

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Organizer
Photonics BW e.V.
Innovation Network Optical Technologies and Quantum Technologies

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Photonics BW
Innovation Network Optical Technologies and Quantum Technologies

Goals of the Seminar

Target group: Engineers, physicists, technicians, project managers and scientists with fundamental knowledge and first practical experience in optical design and the application of the software OpticStudio.

Learning objectives: The seminar combines theoretical knowledge about optical design for imaging systems with the transfer into practical solutions. The participants improve their knowledge and will be qualified for a broad range of challenging applications in lens design.

Theory and Applications in 3½ days

Other Seminars (in German):

> **Grundlagenseminar Optische Systeme: Design und Simulation**
in Blaubeuren (near Ulm)

> **Beleuchtungsoptik: Entwicklung und Anwendung**
in Weingarten

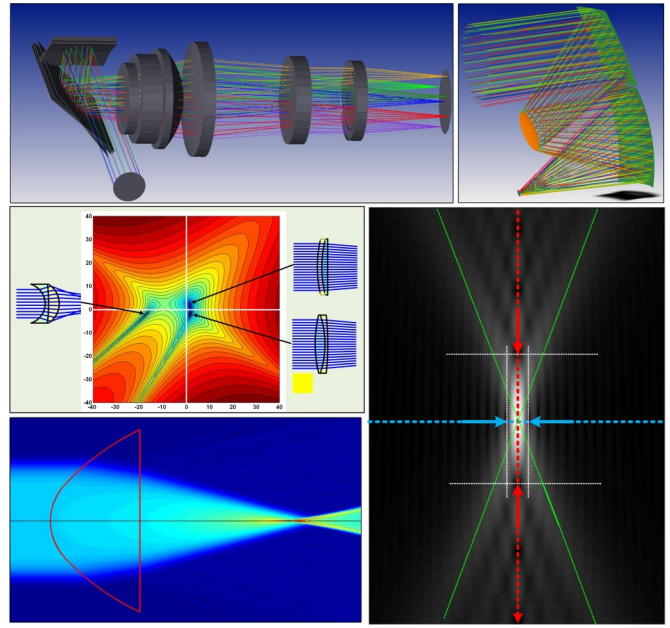
> **Quantensensorik**
in Freiburg

Further information: **www.photonicsbw.de/weiterbildung**

Optical Systems: Design and Simulation

Advanced Lens Design

Further Training Seminar



16th – 19th September 2026
Aalen

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Seminar

Optical design is a key technology for innovations in medical and biotechnology, automotive applications, industrial manufacturing, mechanical engineering, space technology, lithography and consumer applications.

Optical systems become more and more complex with increased functionality and further specific optimization. This trend results in a growing demand for the qualification and competence of optical designers. In addition to the basic seminar „Optische Systeme: Design und Simulation“, Photonics BW offers the seminar „Advanced Lens Design“ for extending and deepening the knowledge in lens design.

Concept

> The seminar combines theoretical knowledge about optical design for imaging systems with the transfer into practical solutions. The participants improve their knowledge and will be qualified for a broad range of challenging applications in lens design.

> Intensive coaching and assistance by the lecturing team.

Target Group

The target group are engineers, physicists, technicians, project managers and scientists with **fundamental knowledge and first practical experience** in optical design and the application of the software OpticStudio. We invite beginners to our basic seminar "Optical Systems: Design and Simulation" in Blaubeuren (German).

The seminar is limited to a maximum of 20 participants. For a successful participation, you should bring your laptop with an installed license of OpticStudio. If you need a time-limited license during the seminar, please inform Photonics BW by mail at:
info@photonicsbw.de

Content

Theory und Methods

> **Advanced aberration theory:** Higher orders, induced aberrations, sine condition, pupil aberrations, isoplanatism

> **Optimization and correction:** Method of optimization, special approaches for correction, global algorithms, glass selection, structural changes, stop position, field lenses

> **Chromatical correction:** Achromatization, special achromates, apochromatic systems, spherochromatism, lateral chromatical aberrations, new achromate, dialyte and Schupman lenses

> **Correction methods:** Lens bending and splitting, aplanatic surfaces, AC lenses, symmetry, wide angle approaches, sensitivity

> **Field flatness:** Petzval theorem, correction of image flatness

> **Tolerancing:** Types of tolerances, Monte-Carlo simulation, realistic quality estimation, tolerancing aspheres, thermal degradation

Special Components

> **Aspheres:** Types of surface description, Forbes aspheres, spherical correction, optimal location of aspheres

> **Freeforms:** Motivation, representation of surfaces, optimization, aberrations and quality assessment, aspects of realization

> **Diffractive elements:** Diffraction and efficiency, modelling approaches, aberrations and correction, false light

Selected Applications

> **Simple systems:** 4f systems, relays, endoscopes, eyepieces, scan lenses

> **Microscopic systems:** Principle, objective lenses, tube optics, confocal systems, illumination aspects, stereo microscopes

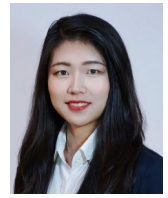
> **Mirror systems:** Basic properties, telescopes, freeform solutions

Seminar Coaches

Prof. Dr. Herbert Gross worked from 1982 to 2012 in the optical design department of Carl Zeiss, which he headed for 14 years. From 2012 to 2022, he was appointed as a professor for optical system design at the Friedrich-Schiller University of Jena. He is the editor and main author of the 5-volume book series „Handbook of Optical Systems“. He is currently publishing his new book series "Lens Design for Imaging" with the volumes "Fundamentals of Optical Systems", "Aberration Theory" and "Correction Methods" (Publisher: Wiley-VCH). Prof. Dr. Herbert Gross serves as a lecturer in the seminars of Photonics BW since 2003. His main areas of interest are physical optics and beam propagation, coherence theory, lens design methods, aberration theory and freeform systems.

Dr. Yi Zhong-Schipp works at Carl Zeiss in lens design since 2020. Between 2014 and 2019, she was doctorand student and postdoc in the group of Prof. H. Gross in Jena. She assists also in lecturing and coaching of students. Her special areas of knowledge are aberration theory, micro optics and freeform systems.

Dr. Dennis Ochse is a leading lens designer at Jenoptik in the range of freeform optics. He designed scan systems, microscopes, cameras and anamorphic systems in industrial projects and founded research projects. His special interests are aberration theory, and system correction. Before he started his industrial career, he studied mathematics in Marburg and Kaiserslautern.



Dr. Ziyao Tang is currently working at Carl Zeiss AG as optical system engineer since April 2022. After her master graduation at the Friedrich-Schiller University Jena, she joined the research group of optical system design of Prof. Herbert Gross in 2019 and received her doctoral degree in 2022. Her major research direction covers aberration theory, genetic optimization algorithm and freeform optics.