ZEMAX OPTICSTUDIO

# 2025 R1.01 Release Notes

February 12th, 2025

# 1 Tools, Features, and Capabilities

## 1.1 Export Optical Design to Speos Enhancements (All Editions)

**Expanded support for surfaces, objects, mirrors, and apertures in the Export Optical Design to Speos tool.**

The Export Optical Design to Speos tool continues to expand its capabilities, enabling users to model a wider range of optical systems for system-level stray light analysis in Ansys Speos.

This update introduces support for Coordinate Breaks outside material and adds a new sequential surface, Off-Axis Conic Freeform. Users can now model mirror versions of several sequential surfaces, such as Even and Odd Aspheres, Extended Aspheres, Biconics, Zernike Sags, and Off-Axis Conic Freeform, broadening the range of supported optical geometries.

In Non-Sequential mode (NSC), newly supported objects include Off-Axis Mirrors and Biconic Zernike Lenses. Additionally, users can now define mirror versions of key NSC objects, including Standard Lenses, Compound Lenses, Aspheric Surfaces, Q-type Aspheres, and more, providing more flexibility when modeling reflective systems.

To improve fidelity between OpticStudio and Speos, coating performance for both uncoated and coated mirrors is exported, ensuring optical properties are consistently represented across both tools. Furthermore, sequential apertures - including rectangular and elliptical (incl. decenters), and circular with minimum aperture - are now supported, along with aperture definitions for NSC objects, allowing users to accurately model systems with non-circular apertures.

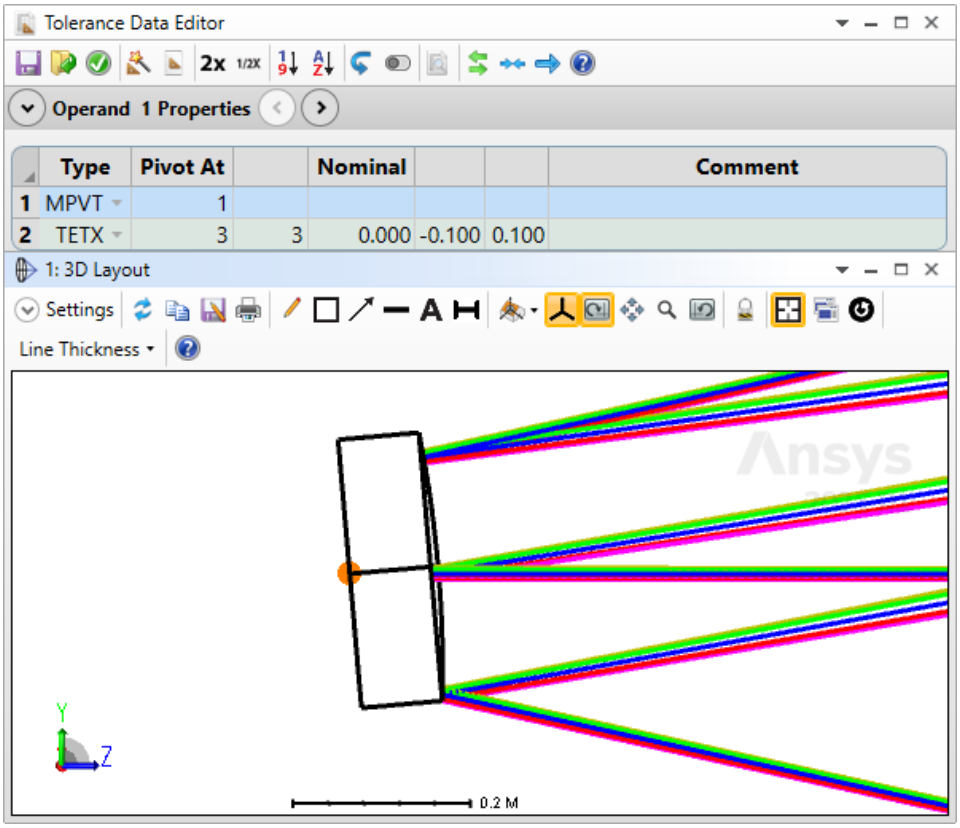
These enhancements further streamline the workflow between OpticStudio and Speos, enabling users to export and analyze more complex optical systems.

## 1.2 On-Axis Mirror Support for MPVT Tolerance Control Operand (Premium & Enterprise editions)

**Easily define mirror pivot points with descriptive names for streamlined tolerancing.**

The MPVT (Mechanical Pivot Point Tolerance) operand now offers greater flexibility and precision in defining mechanical pivot points for optical components. Previously introduced in Ansys Zemax OpticStudio 2025 R1, MPVT allows pivot points to be placed at key locations on an optic, including the front/rear surface vertex, front/rear mechanical edge, or geometric center, ensuring accurate

alignment and positioning. Users can also select pivot point locations from a dropdown menu with descriptive names, eliminating the need to reference numerical codes and improving usability. In 2025 R1, MPVT introduced support for on-axis lenses, and in 2025 R1.01, this support has been extended to on-axis mirrors, further broadening its applicability in optical modeling. Additionally, MPVT now accounts for mirror substrates when defining pivot points, ensuring accurate mechanical modeling. These enhancements streamline optical design workflows, enabling precise and reliable tolerancing.




## 1.3 Expanded Unit Support in ISOX Operands (All Editions)

**Use your preferred units when tolerancing a surface form or creating optical drawings.**

This update enhances the flexibility and precision of surface form tolerancing for optical components and applies to ISOX operands (ISOA, ISOB, ISOC, and ISOD), which now offer expanded unit options for more accurate and versatile tolerancing. These operands, which add power, P-V irregularity, P-V rotationally symmetric irregularity (RSI), and RMS total irregularity to the surface, now support additional units for tolerancing the surface form of an optic. Users can select from nanometers, fringes, or microns, allowing them to choose the most appropriate unit for their specific application. Additionally, in the ISO Element Drawing tool, data from these operands, with the selected units, is automatically placed in the 3/A(B/C) drawing note for surface form, ensuring clear and accurate representation in the drawing notes. These enhancements streamline the tolerancing workflow, providing users with greater control and precision in their optical design and analysis processes.

# 2 LIBRARIES AND CATALOGS

## 2.1 CATALOG UPDATES (ALL EDITIONS)

**Get the latest material catalogs from Schott and NHG.**

**Materials**

- Schott
  - Updated dispersion coefficient values: F2HTi
  - Updated melt frequency: LAFN7, N-LAF35
  - Updated Stress Birefringence Data: N-BK7, N-BK7HT, N-BK7HTi
  - Updated Internal Transmittance: SF57HTultra
  - Removed from catalog: N-SF6Q2
- NHG
  - New glasses added: H-LAK72, S-LAK72, H-ZF4A, S-ZF4A, H-ZLAF54A, S-ZLAF54A

# 3 FEATURE EXPERIMENTS

## 3.1 NSC SEQUENCE SELECTOR (PREMIUM & ENTERPRISE EDITIONS)

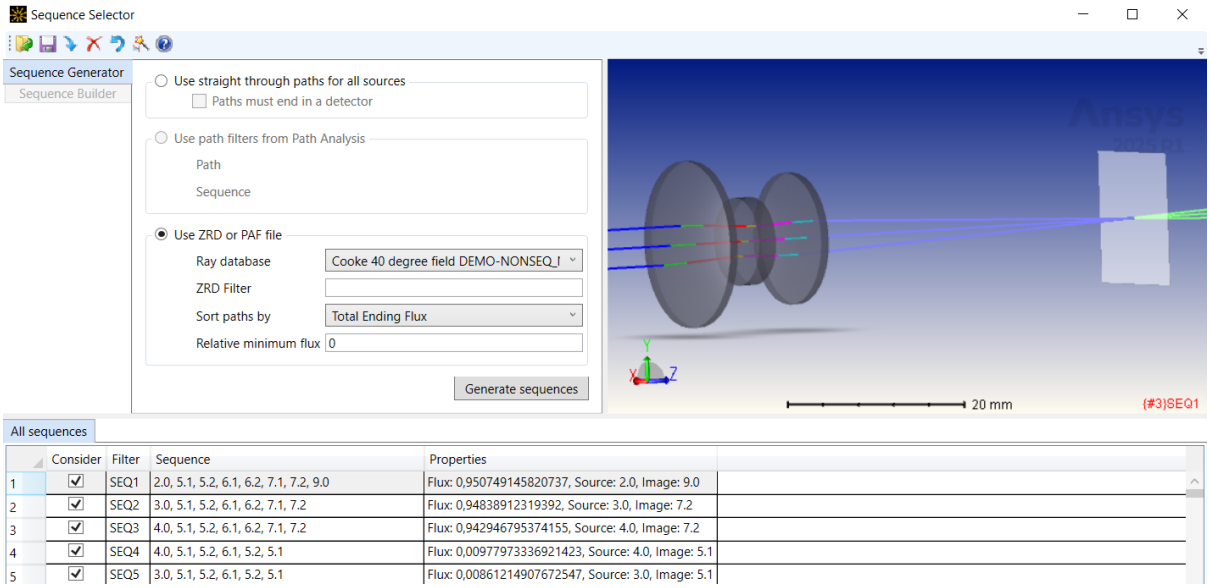
**Generate persistent sequence filters with the new Sequence Selector tool.**

You are invited to try our new feature experiment, the Sequence Selector.

Now, you can generate persistent sequences to track, filter, and analyze rays following a specific optical path in Non-Sequential mode. This feature helps identify unique sequences and assigns each a sequence filter, which can be changed by the user to easily identify important sequences. The sequence filters allow users to utilize them in analyses, save the sequence database, and retrieve it at a later time. Unlike a path generated by the Path Analysis tool, a sequence remains persistent throughout the system, and it is designed to enable complex analysis such as component-level stray light effects. This feature is valuable for applications such as cellphone cameras, VR/MR devices, HUD systems, and folded systems such as CubeSats.

You can find this tool in the Help Tab when using Non-Sequential mode. To open the Feature Experiment, go to Help > Test Lab > Feature Experiments > Sequence Selector.

We invite you to use this tool and provide us with feedback in our Community Forum to make this a full feature in upcoming releases.




# 4 Bug Fixes

- **Ansys Licensing Client -** Fixed an issue where the Ansys Licensing Client could not be opened after installing with the automated installer.
- **ISO Element Drawing** - Fixed an issue where the ISO Element Drawing shows the same diameter twice in a singlet drawing.
- **ISO Element Drawing** - Fixed an issue where the ISO Element Drawing omitted to include the sag value for one side of a singlet.
- **ISO Element Drawing** - Fixed an issue where the marginal lens thickness would be incorrectly calculated in some situations for the ISO Element Drawing.
- **PAF File** - Fixed an issue where OpticStudio would not load a PAF file due to being an unrecognized version but did not display a warning to the user.
- **Export Optical System to Speos** - Fixed an issue where the decenter of an aperture did not appear correctly after export to ODX.
- **MPVT Operand** - Fixed an issue where the MPVT operand could incorrectly position the pivot point for a mechanical edge for mirrors with a circular aperture.
- **MPVT Operand** - Fixed an issue with the MPVT operand where secondary mirror pivots could be calculated incorrectly.
- **Quick Yield** - Improved agreement between the yield curve in a Monte Carlo tolerancing calculation and the yield curve in a Quick Yield analysis when ISOB and ISOC operands are present in the Tolerance Data Editor.
- **ZOS-API** - Fixed an issue where ray database files (.ZRD) could not be read via the ZOS-API.
- **Tolerance Data Editor** - Fixed an issue where the nominal value column does not appear or update correctly in TDE when a COMP operand is set to Surface 0.
- **Part Designer** - Fixed an issue where UI colors could make text unreadable in the Part Designer.
- **Filter Strings** - Fixed an issue where filter strings of the form {#n1}{complex filter string} would not work properly.
- **Help Files** - Fixed an issue where online Help files were not accessible from within OpticStudio.

- **ISOA, ISOB, and ISOC Operands** - Fixed an issue with ISOA, ISOB, and ISOC operands where surfaces inserted in the tolerancing operation could be in an incorrect order.