Update Guide
Release 2022.5

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Contents

INTRODUCTION

This document serves as a guide for new features and changes in TracePro 2022.5. This release has several new features to make TracePro more convenient to use and expand its capabilities. This release also fixes several problems reported by TracePro users.

WHAT'S NEW IN TRACEPRO 2022.5?

Changes in TracePro 2022.5 are summarized as follows:

- Ray tracing performance improvement for large models with many sources.
- Ray Sorting now can be applied to 3D Irradiance Maps.
- Path Sort Table can now interact with Candela Plots.
- Radiometric and Photometric Plot Units are now controlled in the Options dialog for each plot.
- New RepTile geometry type: Tetrahedron.
- OSLO and Zemax importers now support multiple configurations.

RAY TRACING PERFORMANCE IMPROVEMENT

The ray tracing algorithm has been optimized for better performance in large models with multiple sources that use the same wavelength(s). In no case is performance reduced compared to prior releases.

RAY SORTING AND 3D IRRADIANCE MAPS

Ray Sorting now applies to 3D Irradiance Maps. This means that if you are displaying 3D Irradiance and perform Ray Sorting, only the rays that are in the current sort will be used to compute the 3D Irradiance.

PATH SORT TABLE AND CANDELA PLOTS

With this release the **Path Sort Table** can now interact with **Candela Plots** when the **Ray Selection** in **Candela Options** is set to *Use incident rays from selected surface or Exit Surface*.

RADIOMETRIC AND PHOTOMETRIC UNITS FOR ANALYSIS PLOTS

The units setting for analysis plots is now controlled in the Options dialog box for each plot – Irradiance/Illuminance Map, 3D Iradiance/Illuminance Map, all Candela Plots, etc. In addition, many new options for units are available. For example, in the options for the **Polar Iso-Candela Plot**, the following units choices are available:

- W/sr
- mW/sr
- kW/sr
- MW/sr
- cd
- cd/klm

For the Irradiance/Illuminance Map, the units choices are:

- W/m^2
- fc
- W/f^2
- W/cm^2
- W/m^2
- W/mm^2
- mW/m^2
- mW/cm^2
- mW/mm^2
- kW/m^2
- kW/cm^2
- kW/mm^2
- MW/m^2
- MW/cm^2
- MW/mm^2
- lux

The **Analysis Units** setting in **Raytrace|Raytrace Options** has been eliminated. Each

Analysis Output Text File Changes

All analysis output text files created by saving analysis plots as text have a new line in the header to indicate the units in the file. For example, the Irradiance Map text file header now includes a line for Map Units, in this case W/cm^2, as shown in the snippet below:

```
Linear Units in millimeters
Map Units in W/cm²
Data for Observation Disk Front
Data generated at 16:14:09 August 05, 2022
```

NEW REPTILE GEOMETRY: TETRAHEDRON

A tetrahedron is the 3D solid analog of the triangle. It is the simplest solid that can be make from plana faces. A RepTile tetrahedron is a three-sided irregular pyramid with its base on the z=0 plane. It is specified by its four vertices as shown in Figure 1. Three of the vertices lie in the local RepTile z=0 plane, while the fourth vertex lies above or below the plane and defines the height or depth of the tetrahedron.

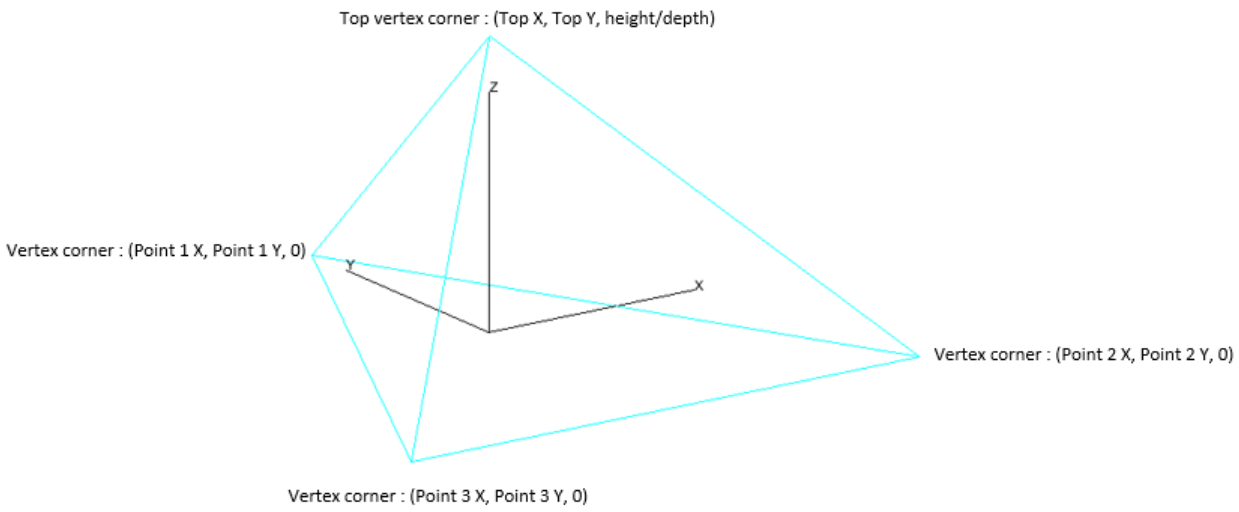

Figure 1. Four vertices specify a RepTile tetrahedron.

IMPORT MULTIPLE CONFIGURATIONS FROM OSLO AND ZEMAX

When you open an OSLO or Zemax file that has multiple configurations, e.g. a zoom lens, all configurations are now imported. Each configuration is opened in a separate group in the System Tree. Figure 2 shows an example of a zoom lens designed in OSLO and opened in TracePro. Each group has all the lens elements in the design, so many elements will overlap each other.

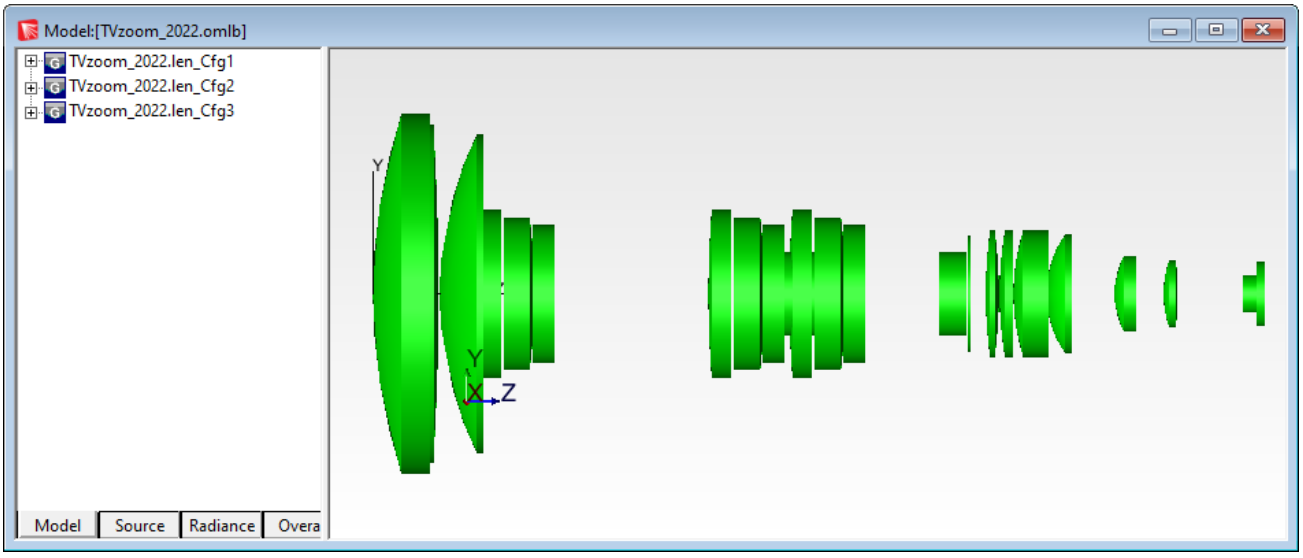

Figure 2. OSLO lens with three configurations after opening in TracePro.