Update Guide
Release 2018.6

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INTRODUCTION

This document serves as a guide for the new features and changes in TracePro 2018.6. The enhancements in TracePro 2018.6 are: one new feature for the 3D Interactive Optimizer, several new features for the Texture Optimizer II, one new feature for the Analysis Toolkit, one new feature for the Surface Property Generator, updated controls for Brightness, Contrast, and Gamma for True Color plots, 64-bit version of Notepad++, and new scheme commands. This release also fixes several problems reported by TracePro users. See the TracePro Revision History at www.lambdares.com for more details on problem resolutions.

WHAT'S NEW IN TRACEPRO 2018.6?

Changes in TracePro 2018.6 compared to 2018.5 are summarized as follows:

- 3D Interactive Optimizer: New feature: Fit Asphere for central symmetric segment.
- Texture Optimizer II
    - Add capability of editing point in Edit Cell Density by Path dialog
    - Add capability of exporting real geometries along u- or v- direction on curve surface
    - Add minimum density when optimizing dot pattern
    - Add new dot pattern – Fix grid staggered and parameterized
- Analysis Toolkit: Add capability of analyzing Photorealistic render raw data file.
- Surface Property Generator: Link the catalog and property boxes with TracePro database.
- True Color Plots: Updated controls for Brightness, Contrast, and Gamma.
- 64-bit version of Notepad++
- New scheme commands.

3D INTERACTIVE OPTIMIZER

A new feature is available for users who wish to define an optical surface using the aspheric sag equation. The most effective way to optimize a lens in the 3D Interactive Optimizer is to treat the lens surface as a spline. The new feature attempts to bridge both methods by allowing you to fit the aspheric sag formula to the spline curve. When right-clicking on a central symmetric segment, "Fit asphere" will appear in the bottom of the pop-up menu, as shown in Figure 8. Choosing this selection opens the dialog box shown in Figure 2, displaying the aspheric coefficients resulting from fitting the spline curve.

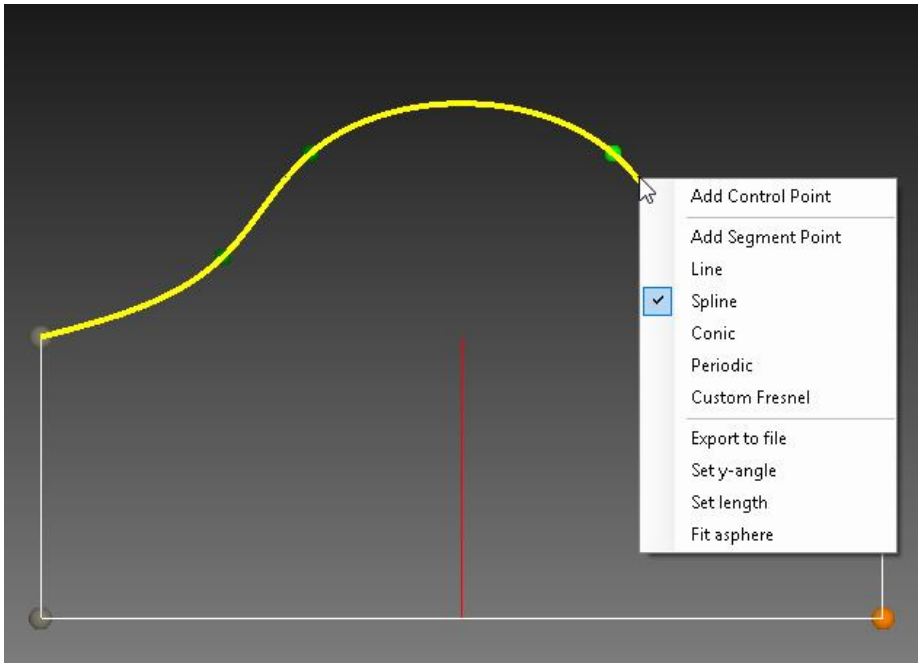

Figure 1. New pop-up menu item Fit asphere in the 3D Interactive Optimizer. Use this to fit aspheric coefficients to a spline profile curve.

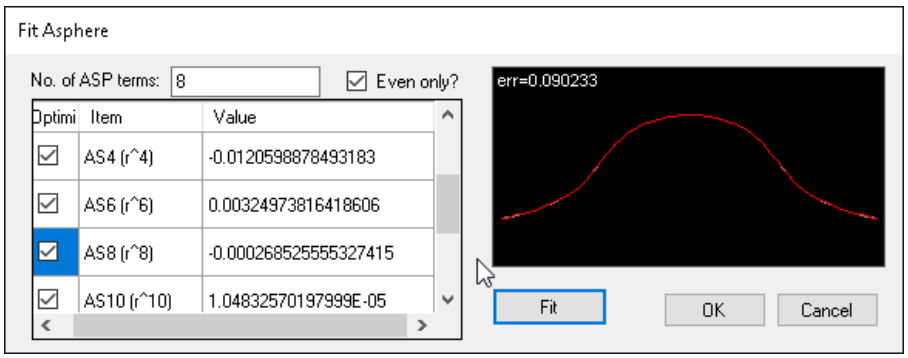

Figure 2. Dialog box showing aspheric coefficients resulting from fitting to the spline curve.

TEXTURE OPTIMIZER II

There are four new features in the Texture Optimizer II, as described in the sections below.

Editing point in Edit Cell Density by Path dialog

This feature adds an entry in the pop-up menu so you can manually edit the position of a control point, as shown in Figure 3.

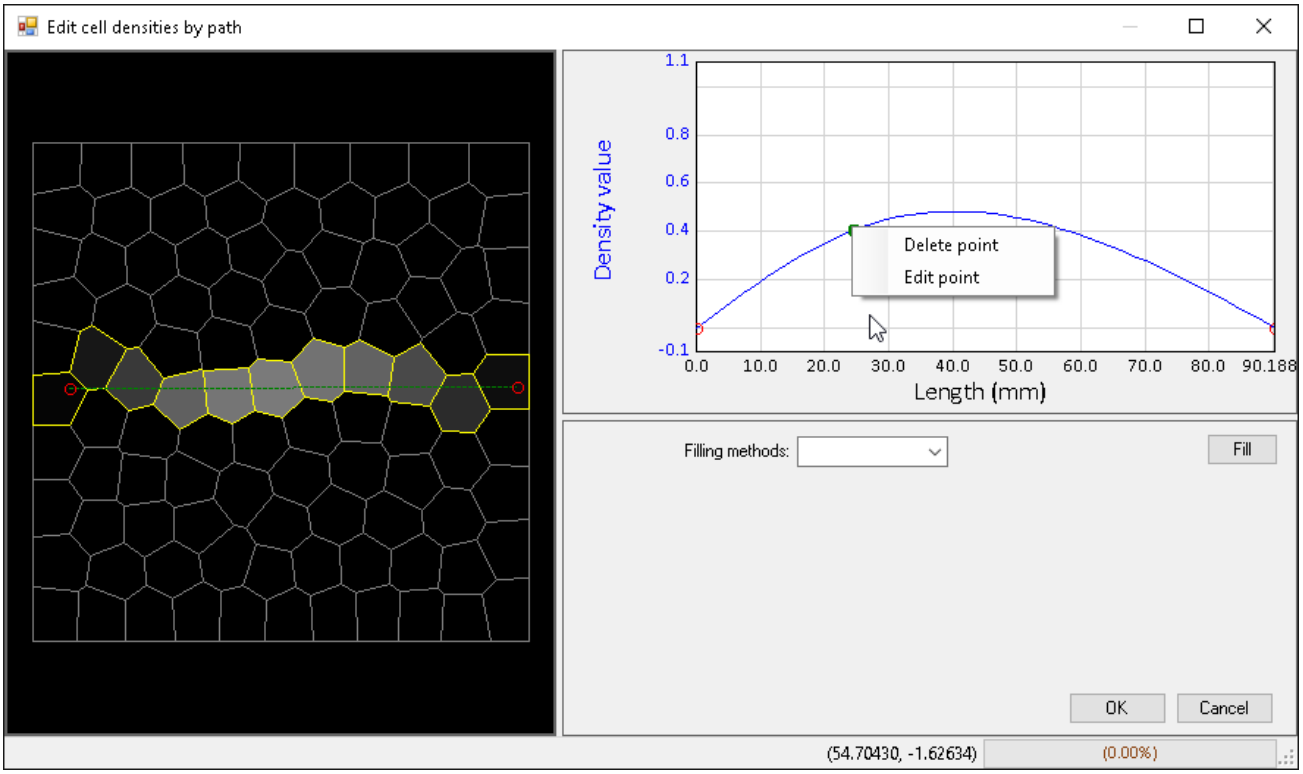

Figure 3. Manually editing the position of a control point in the Edit cell densities by path dialog.

Exporting real geometries along u- or v- direction on curved surface

When designing vehicle tail lamp light pipes, it is common to create trenches or grooves on the bottom surface to control the exiting light. However, if the base light pipe is curved, we need to create trenches along the path of the curve.
For example, suppose we want to make trenches on the curved light pipe shown in Figure 4. We first read the u-v data from TracePro into Texture Optimizer II Dot Generator as in Figure 5. Using the new u-direction as a zero axis and v-direction as a zero axis makes the generated grooves lie along the light pipe as desired, as shown in Figure 6.

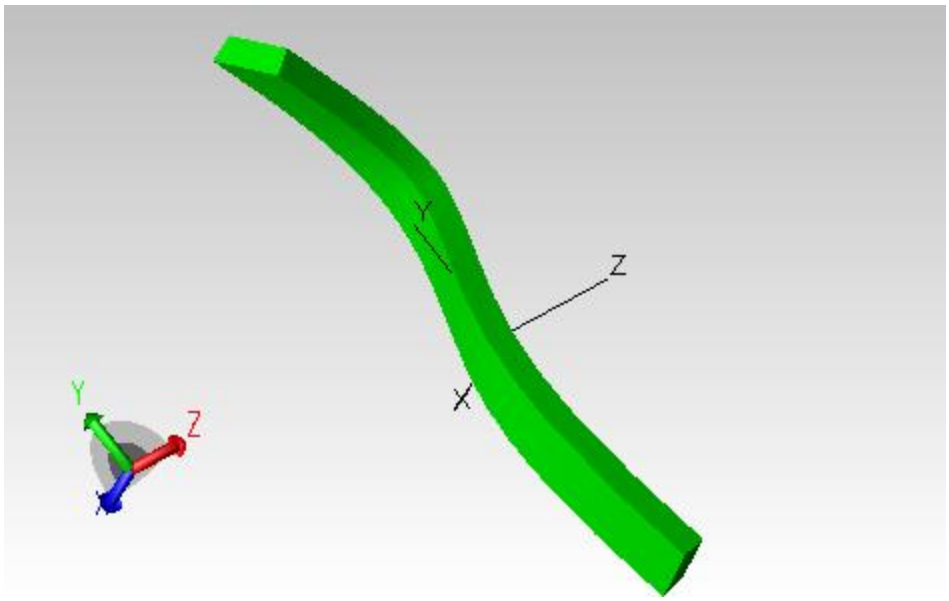

Figure 4. Curved light pipe needing trenches or grooves along the bottom.

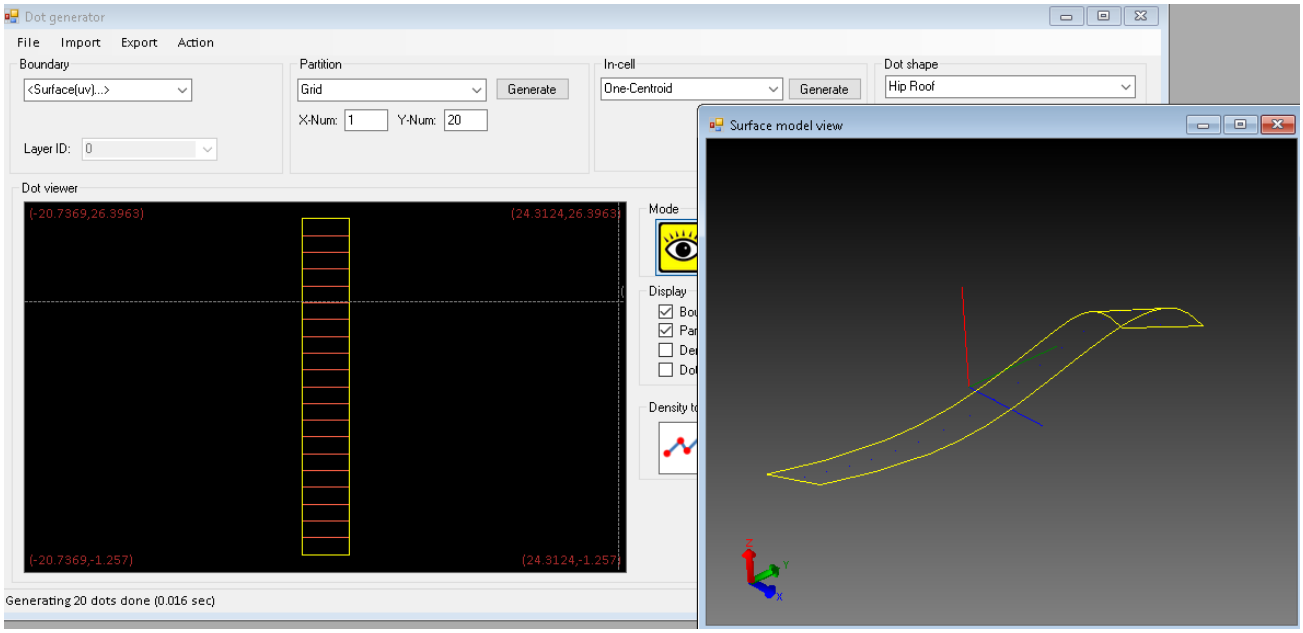

Figure 5. Reading the u-v coordinates into the Texture Optimizer II.

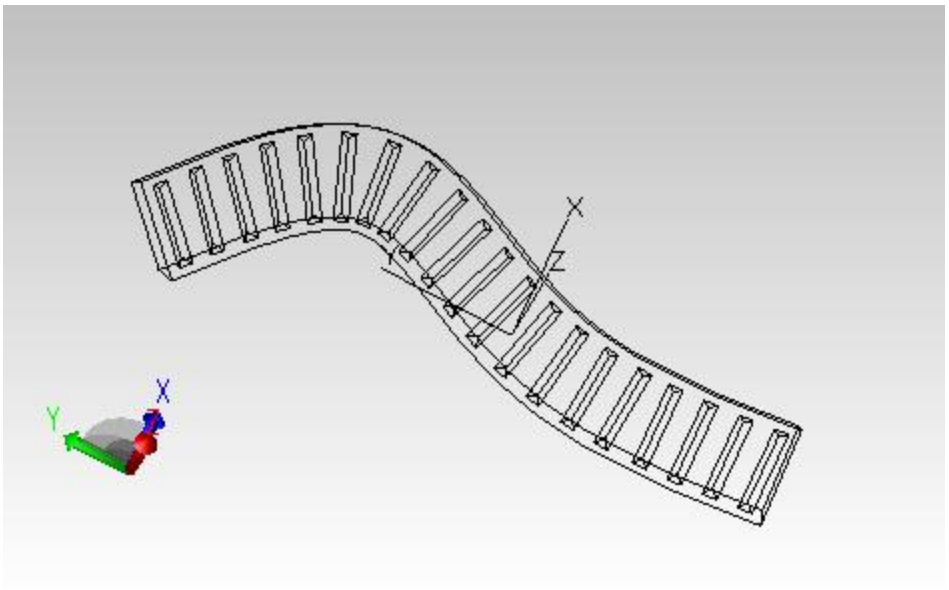

Figure 6. The generated trenches or grooves aligned along the u-v coordinates.

Minimum density when optimizing dot pattern

This feature lets you control the minimum size of dots when optimizing a dot pattern. This is often needed when using ink-printing to create the dot pattern. The minimum density setting prevents the optimizer from making dots that are too small.

New dot pattern – Fix grid staggered and parameterized

Using this new feature, the Texture Optimizer II can accept parameterized values for Pitch x and Pitch y. It uses the same system variables iRow and jCol as TracePro uses. An example with formulas entered for Pitch x and Pitch y is shown in Figure 7.

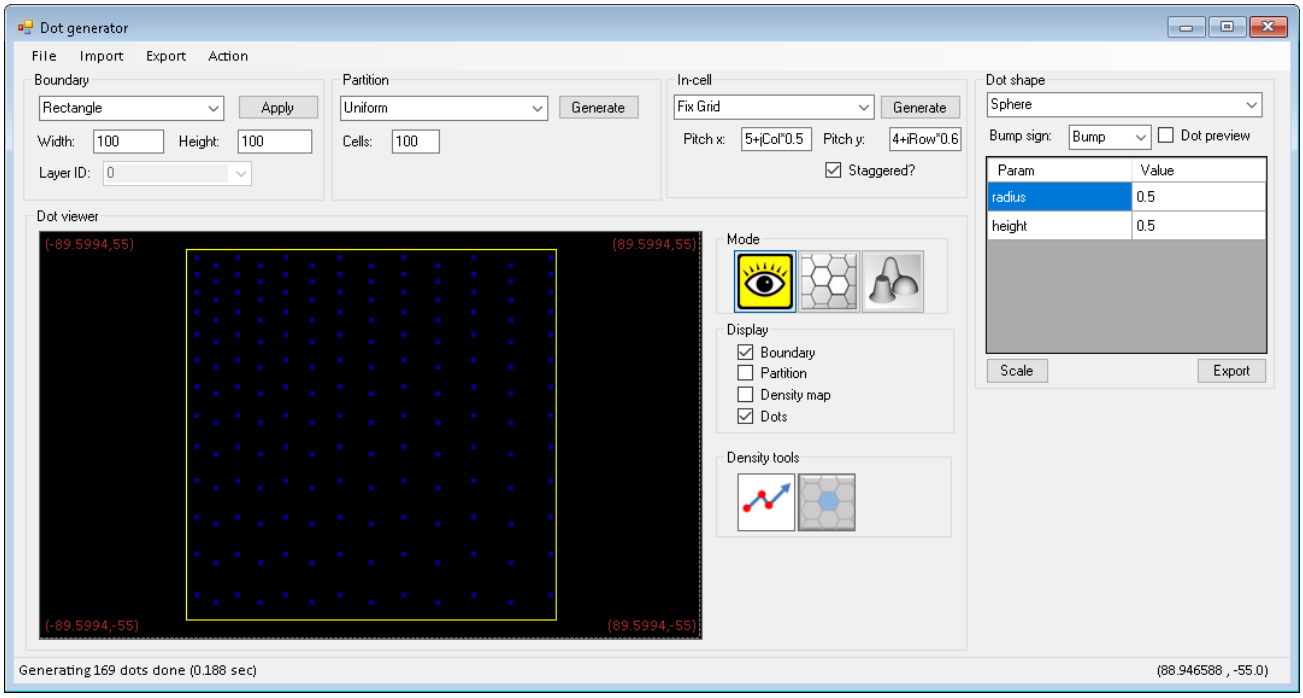

Figure 7. Dot generator in the Texture Optimizer II showing parameter formulas for Pitch x and Pitch y.

ANALYSIS TOOLKIT

A new feature provides an interface for you to load the file saved from a Photorealistic Rendering, so that you can review the previous results without re-running the simulation.

SURFACE PROPERTY GENERATOR

When exporting a surface property using the Surface Property Generator, the Catalog and Property lists are linked to the TracePro property database, so you can select an existing catalog to which to add the new property.

BRIGHTNESS, CONTRAST AND GAMMA CONTROLS

The Brightness, Gamma, and Contrast controls have been updated for all True Color plots (Irradiance/Illuminance Maps, 3D Irradiance/Illuminance Maps, and Photorealistic Rendering). The values are now floating-point numbers. The range of the brightness and contrast values is 0 to 1, and the range of gamma values is 0 to 3. Figure 8 shows the default values of the settings, in this case for Photorealistic Rendering Options.

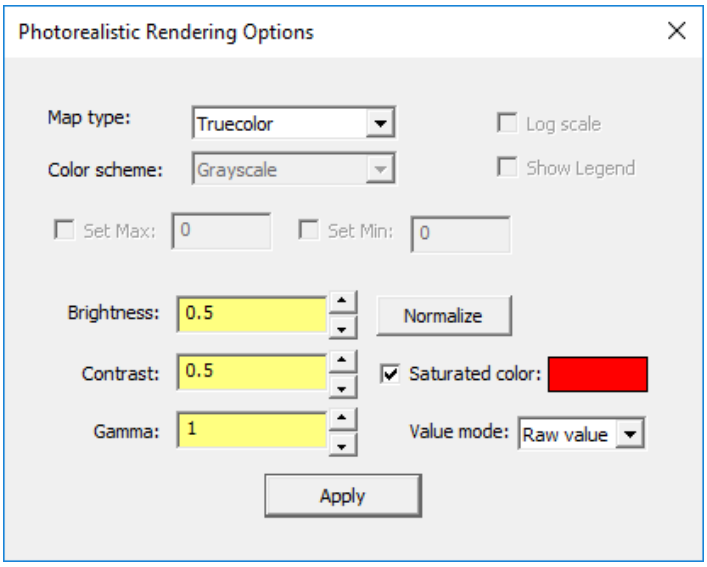

Figure 8. Photorealistic Rendering Options with default values for Brightness, Contrast, and Gamma.

You can simply type in new numbers and click Apply. Alternatively, you can click on the up and down scroll arrows or use the up and down arrows on your keyboard to change the values by 0.01. Using Shift-click or Ctrl-click changes a value by 0.0001 (1.0e-4), and using Ctrl-Shift-click changes a value by 1.0e-6. The map or rendering does not update until you click Apply or press the Enter key.

You can rapidly apply small changes and observe the result by using the keyboard arrows and the Enter key.

64-BIT VERSION OF NOTEPAD++

The 64-bit version of Notepad++ will be installed as part of the TracePro 2018.6 update. During the installation you can choose to remove the 32-bit version used in previous TracePro releases, or keep it and install the 64-bit version in addition.

NEW SCHEME COMMANDS

Several new scheme commands are now available:

- (analysis:get-sort-path-value …)
- (analysis:enable-3d-irradiance-saturated-color …)
- (analysis:get-enable-3d-irradiance-saturated-color …)
- (analysis:enable-irradiance-saturated-color …)
- (analysis:get-enable-irradiance-saturated-color …)
- (analysis:enable-radiance-saturated-color …)
- (analysis:get-enable-radiance-saturated-color …)
- (view:enable-photo-realistic-render-saturated-color …)
- (view:get-enable-photo-realistic-render-saturated-color …)