Synopsys Introduces New LightTools Release with Advanced Stray Light Analysis

Version 8.7, Now Available, Enables Innovative Illumination Optics for Aerospace, Defense, Automotive, and Consumer Applications

MOUNTAIN VIEW, Calif., March 12, 2019 /PRNewswire/ -- Synopsys, Inc. (Nasdaq: SNPS) today announced the release of version 8.7 of its LightTools® illumination design software for the modeling, analysis, and optimization of illumination optics. LightTools 8.7 introduces advanced capabilities to help optical designers pinpoint and correct stray light issues—including ghost images and flare—early in the design process. Designers can quickly prototype their opto-mechanical systems, explore the interactions of light with system components, and identify sources of unwanted surface interactions that impact system performance. LightTools stray light analysis is particularly useful for improving the design of next-generation illumination optics used in space-borne telescopes, infrared optical systems, consumer electronics, autonomous vehicles, and AR/VR/MR applications.

The comprehensive toolkit of stray light analysis features in LightTools 8.7 is supported by fast performance, industry-leading accuracy, and efficient workflows. Highlights include:

- Support for the Harvey-Shack and ABg scattering models, as well as a scatter evaluation tool, to simulate highly-polished surfaces. In addition, a new microfacet optical property allows rough surfaces to be precisely modeled using a single, on-axis bidirectional scattering distribution function (BSDF) measurement, greatly reducing measurement costs and time, or by direct measurement of the surface's slope distribution.
- New receiver filters that track ray-surface interactions and identify contributions from ghosts and flare. These filters can help designers isolate imaging rays or specular and scatter illuminance.
- The Ray Path analysis enhancements that deliver increased performance and provide detailed data to locate ghost images. This data can identify how much unwanted power is incident on a detector, for example, or identify the peak power when looking for distinct ghost images and evaluating a system prone to laser damage.
- Options for specifying a Normalized Power Range to filter analysis results to a subset of ray paths based on the total power collected in each path.
- Scatter aiming enhancements that provide additional flexibility when specifying aim areas, with options for polygonal and surface-based shapes, as well as the ability to position the aim area in global coordinates.
- Contamination scattering for modeling the effects of dust and other particulates that may contaminate optical surfaces, such as mirrors.

"The latest LightTools release represents a major advance in stray light analysis, with versatile features such as new scattering models to accurately simulate opto-mechanical surface characteristics and filters to identify sources of unanticipated stray light effects," said George Bayz, vice president of Synopsys' Optical Solutions Group. "Companies using LightTools can achieve significant product development cost savings by identifying and fixing stray light issues early in product development."

Additional enhancements in LightTools version 8.7 include:

- A source power scaling feature allows users to adjust the power of model sources and see the results immediately. The feature dramatically speeds optimization and analysis of illumination system color rendering.
- LightTools' unique modeling capabilities for freeform optics in illumination systems have been enhanced with design features to correct distortion caused by secondary optics, such as cover plates, turn mirrors, and projection assemblies.
- Expanded design features for biomedical optics, horticultural lighting, light guides, and street lighting.
- Significant additions to LightTools material and optical property libraries, which can simplify and speed model setup and analysis, as well as additions to the example model library, which provides models that demonstrate how to use LightTools features.

About Synopsys LightTools Software

LightTools is a 3D optical engineering and design software product that supports virtual prototyping, simulation, optimization, tolerancing, and photorealistic renderings of illumination applications. Learn more at https://www.synopsys.com/optical-solutions/lighttools.html.

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As the world's 15th largest software company, Synopsys has a long

history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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