Synopsys' CODE V Delivers Optical Design Innovations That Enable Reduced Manufacturing Costs

CODE V version 10.5 is now generally available

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Highlights:

- Direct optimization method can reduce sensitivity of optical systems to manufacturing tolerances, improve as-built performance and minimize production costs
- New tolerancing feature provides increased flexibility for modeling surface irregularities and evaluating their impact on system performance

Synopsys, Inc. (Nasdaq: SNPS), a global leader accelerating innovation in the design, verification and manufacture of chips and systems, today announced the availability of Synopsys' CODE V® Optical Design Software, version 10.5, which offers new and improved optimization and tolerancing capabilities for the design of high-performance optical systems with reduced sensitivity to manufacturing and alignment errors. This helps designers create systems in CODE V that not only perform as specified, but are also less expensive to manufacture and can be assembled faster.

"When manufacturing optical systems, it is critical to understand the impact of tolerances on as-built performance," said George Bayz, vice president and general manager of the Optical Solutions Group at Synopsys. "Designers can take advantage of CODE V's ability to deliver accurate predictions of this performance. With version 10.5, we have strengthened CODE V's industry-leading optimization and tolerancing capabilities to help designers optimize to the best design and have confidence that the result can be fabricated."

Reduce Tolerance Sensitivity Control

CODE V has been enhanced to allow direct optimization of the as-built RMS wavefront error, a key performance metric for optical systems. The new Reduce Tolerance Sensitivity control (SAB, for Sensitivity As Built) is used in optimization to reduce the impact of tolerances on final system performance. The tight integration of CODE V's tolerancing and optimization processes helps users create practical optical designs that meet performance requirements and minimize production costs with achievable component and assembly tolerances and post-assembly adjustments. The SAB control can be used in CODE V's local optimization feature, as well as its Global Synthesis® global optimization feature.

"Enhancing the industry-leading efficiency of Global Synthesis with as-built sensitivity optimization makes CODE V a clear choice for optical design," said Ian Murray, senior project engineer at Exotic Electro-Optics. "We observed significant performance gains by directly targeting sensitivities rather than utilizing less reliable metrics."

"With CODE V's Reduce Tolerance Sensitivity control, I achieved a 30 percent improvement in as-built MTF using the same set of tolerances," said Harvey Spencer, chief scientist, optical design at DRS Technologies. "CODE V supports user adjustment of the tolerance sensitivity component weights in the optimization merit function, which is critical to success. The time added to the optimization when using SAB is reasonable, considering the amount of computation performed and the time saved over manual desensitization."

Improved Surface Irregularity Modeling

A new irregularity model for CODE V's Monte Carlo-based tolerancing provides increased flexibility and robustness for modeling optical surface shape irregularities and their impact on as-built system performance. The model utilizes CODE V's interferogram file construct, which allows the direct import of interferometrically measured surface or wavefront deformations to define the tolerance-based surface irregularity. The interferogram file approach can be applied to any surface shape and oriented independently of other lens construction parameters.

Availability & Resources

CODE V version 10.5 is available now and can be obtained by emailingora_support@synopsys.com. Learn more about CODE V at https://www.synopsys.com/optical-solutions.html .

About CODE V

CODE V is an optical engineering and design software solution that supports the optimization, analysis and tolerancing of

image-forming optical systems and free-space photonic devices. For more information, visit https://www.synopsys.com/optical-solutions.html .

About Synopsys

Synopsys, Inc. (Nasdaq:SNPS) accelerates innovation in the global electronics market. As a leader in electronic design automation (EDA) and semiconductor IP, its software, IP and services help engineers address their design, verification, system and manufacturing challenges. Since 1986, engineers around the world have been using Synopsys technology to design and create billions of chips and systems. Learn more at www.synopsys.com.

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