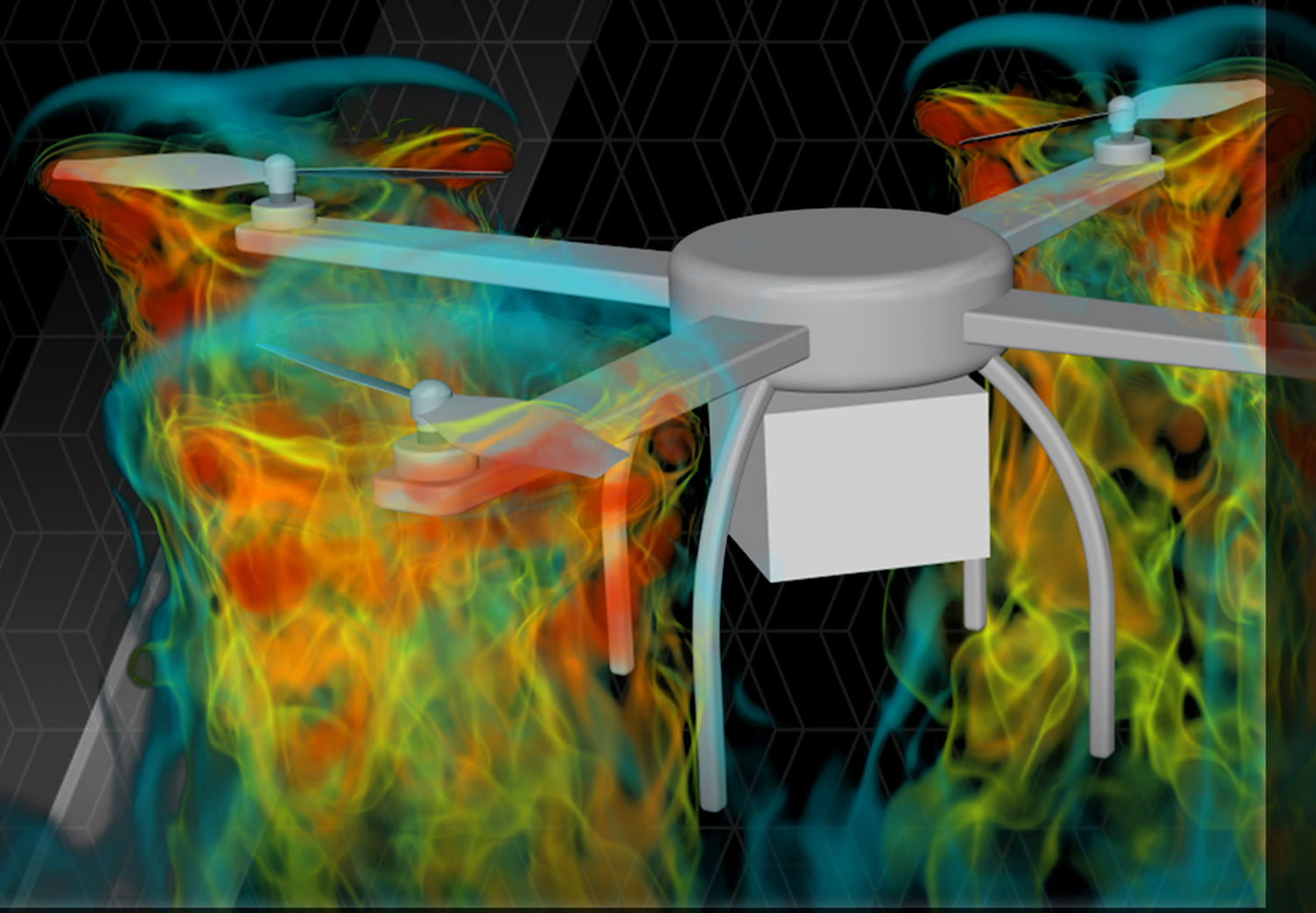
Ansys

2023 R1

Take A Leap Of Certainty

CAPABILITIES



/ OPTICS	Speos Pro	Speos Premium	Speos Enterprise	Speos Optical Part Design	Speos Optical Sensor Test	Speos Hud Design And Analysis	Speos Far Infared Extension	Speos Optical Design Optimizer	OpticsBuilder	OpticStudio Professional	OpticStudio Premium	OpticStudio Enterprise
ANSYS PRODUCTS EMBEDDED												
Ansys SpaceClaim Direct Modeler	●	●	●									
Ansys SpaceClaim Catia V5 Interface	●	●	●									
Ansys DesignXplorer	●	●	●									
Ansys License Manager	●	●	●									
GENERAL SOLVER CAPABILITIES												
Monte-Carlo Forward Ray Tracing	●	●	●									
Monte-Carlo Backward Ray Tracing		●	●									
Deterministic Simulation	▲	●	●									
Spectral Propagation	●	●	●									
Dispersion	●	●	●									
Surface Diffusion	●	●	●									
Volumic Diffusion	●	●	●									
Ambiant Material	●	●	●									
Non-Homogeneous Materials	●	●	●									
SPEOS Live Preview (GPU Acceleration)		●[12]	●[12]									
Speos GPU Compute (GPU Acceleration)		●[12]	●[12]									
Virtual BSDF			●[10]									
PHOTOMETRY / RADIOMETRY												
Intensity	●	●	●									
Illuminance	●	●	●									
3D Illuminance	●	●	●									
Luminance	▲	●	●									
3D Energy Density		●	●									
360 View - Observer		●	●									
360 View - Immersive		●	●									

● Full Support ▲ Limited Capability ■ Requires more than 1 product

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HUMAN VISION												
Dynamic Adaption			●									
Glare Simulation			●									
HDR10 Screen Support			●									
WAVELENGTH RANGE												
Visible (360nm - 830nm)	●	●	●									
UV (100nm - 360 nm)		●	●									
Near IR (830nm - 2.5um)		●	●									
Far Infra-Red (2.5um - 100um)							●					
OPTICAL DESIGN												
Parabolic Surface	●[12]	●[12]	●[12]									
TIR Lens	●[12]	●[12]	●[12]									
Projection Lens	●[12]	●[12]	●[12]									
Optical Lens				●								
Optical Surface				●								
Light Guide				●								
Sharp Cut-Off Reflector				●								
Poly-Ellipsoidal Surface				●								
Micro Optical Stripes				●								
Freeform Lens				●[11]								
Honeycomb Lens				●								
OPTICAL SENSOR												
Field of View					●							
Export Sensor Grid as Geometry					●							
Camera Sensor					●							
Camera Raw Signal Export					●							
Camera Sensor Post Processing					●							
Dynamic Effects in Camera Simulation	●	●	●									
Dynamic Effects in LiDAR Simulation	●	●	●									

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OPTICAL SENSOR												
SPEOS Lens System Importer (ZEMAX OpticStudio)					●							
LiDAR Sensor					●							
LiDAR Rotating & Scanning					●							
LIDAR Raw Time of Flight generation					●							
HEAD-UP DISPLAY												
HUD Optical Analysis						●						
HUD Optical Design						●						
HUD Visualisation						●						
SOLVER PERFORMANCES												
Default Number of Cores	4	4	4									
Parallel Solving on Local PC	●	●	●									
Parallel Solving on Cluster	●	●	●									
Parallel Solving with Ansys Cloud Launched from Desktop	●	●	●									
Ansys RSM Compatibility	●	●	●									
Multi-GPU Solving on Local PC		●	●									
SIMULATION PREPARATION												
Source Group	●	●	●									
Geometry Group	●	●	●									
Local Meshing	●	●	●									
3D Textures		●	●									
Polarizer		●	●									
Fluorescent Converter		●	●									
Light Field	●	●	●									
Preset Manager	●	●	●									

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SIMULATION PREPARATION												
Texture Mapping (Bump, Multi-Layer)		●	●									
Uniform Ambiant Source	●	●	●									
HDRI Source	●	●	●									
CIE Sky Source		●	●									
Natural Light Source		●	●									
Near Infrared Extended Ambient Source		●	●									
Thermic Source							●					
POST PROCESSING												
Virtual Lighting Controller		●	●									
Photometric Numerical Certification	●	●	●									
Colorimetric Analysis	●	●	●									
Spectral Analysis		●	●									
Light Expert	●	●	●									
Layer by Source		●	●									
Layer by Face		●	●									
Layer by Sequence		●	●									
Stray Light Analysis		●	●									
Layer by Polarisation		●	●									
Visibility and Legilbility			●									
Night Vision Goggle							●					
Script Automation	●	●	●									
OPTIMIZATION												
Parameters	●	●	●									
Design of Experiment	●[3]	●[3]	●[3]									
Design Optimisation	●[3]	●[3]	●[3]					●[10]				
Ansys optiSLang Interface (12)	■	■	■									

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TOOL INTEROPERABILITY												
Shared Workflows with Ansys Lumerical Products	●	●	●									
Shared Workflows with Ansys Zemax OpticStudio	●	●	●									
Shared Workflows with Ansys Mechanical	●	●	●									
IMAGING & AFOCAL DESIGN												
Sequential Ray Tracing										●	●	●
12 Field Points										●	●	●
50 Field Points (Best For Aspheric Design)										●	●	●
2000+ Field Points (Best For Freeforms)											●	●
Optimization										●	●	●
Contrast Optimization										●	●	●
High-Yield Optimization										●	●	●
Tolerancing										●	●	●
Quick Yield Analysis										●	●	●
Tolerance Data Viewer										●	●	●
Tolerance Data Analysis										●	●	●
Black Box Encryption										●	●	●
Image Quality Analysis										●	●	●
Image Simulation Analysis										●	●	●
Full-Field Aberration Analysis										●	●	●
Aspheric Design										●	●	●
Freeform Optics										●	●	●
Diffractive Optics										●	●	●
Ghost Focus Generator										●	●	●
Multiple Configerations										●	●	●
Birefringence										●	●	●
Stock Lens Matching Tool										●	●	●
TrueFreeform											●	●

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LIGHTING AND ILLUMINATION DESIGN												
Non-sequential ray tracing										●	●	●
Geometic light sources										●	●	●
Measured light sources										●	●	●
Objects										●	●	●
Detectors										●	●	●
Optimization										●	●	●
Freeform Optics										●	●	●
Tolerancing										●	●	●
Colorimetry										●	●	●
Ray splitting										●	●	●
Ray scattering										●	●	●
Measured source models											●	●
Measured surface scattering models											●	●
LightningTrace											●	●
Source Illumination Map											●	●
Phosphor & fluorescence modeling											●	●
Path analysis											●	●
PROGRAMMING AND INTERFACE												
Zemax Programming Language										●	●	●
User-configurable shortcut keys										●	●	●
MATLAB interoperability										●	●	●
User-defined surfaces and objects										●	●	●
User-defined scatter profiles and sources										●	●	●
Programmable interface (ZOS-API)										●	●	●

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LASERS & FIBERS												
Gaussian beams										●	●	●
Scanning systems										●	●	●
Single mode fiber coupling										●	●	●
Multi-mode fiber coupling										●	●	●
Optimization										●	●	●
Tolerancing										●	●	●
Physical Optics Propagation										●	●	●
M2 & beam quality										●	●	●
CAD INTEGRATION												
Export to STEP, IGES, SAT, STL										●	●	●
Import STEP, IGES, SAT, STL										●	●	●
Dynamic link to CAD Software											●	●
Part-designer - static parts										●	●	●
Part-designer - dynamic parts											●	●
DATA LIBRARIES												
Design Templates collection										●	●	●
Lens Catalog										●	●	●
Materials Catalog										●	●	●
Coatings Catalog										●	●	●
Test Plate Lists										●	●	●
Spectrum Data Files										●	●	●
IS Scatter Catalog											●	●
Radiant Source Models											●	●
IES Source Models											●	●

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STAR												
FEA Data Viewer												●
Load FEA Data tool												●
Fit Assessment tool												●
Alignment Check												●
Structural Data Summary												●
Thermal Data Summary												●
STAR System Viewer												●
Performance Analysis												●
2D Deformation Plot												●
Thermal Index Plot												●
OPTICSBUILDER												
Import .ZBD file									●			
Update .ZBD file									●			
Export .ZBD file									●			
Static Boundary Rays									●			
Generate reference geometry									●			
Add mounting edge									●			
Add fold mirror									●			
Add sources and detectors									●			
Region of interest									●			
Apply surface properties									●			
Create ray filter									●			
Animate rays									●			
Hide/Show Rays									●			
Partial Rays									●			
Ray Geometry									●			
Chief Rays									●			

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OPTICSBUILDER												
Ray Footprints									●			
Show Tolerances									●			
Generate lens drawings									●			
Optical geometry properties									●			
Editable optics									●			
System settings									●			
Optomechanical Packaging Analysis									●			
Simulation									●			
Results									●			
Show detectors									●			
Report									●			
Show Clipping Rays									●			
Show Contaminating Rays									●			
Print									●			

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/ PHOTONICS	CHARGE	CML Compiler	DGTD	FDTD	FEEM	HEAT	INTER-CONNECT	qINTER-CONNECT	MODE	MQW	STACK	RCWA	Verilog-A Platform
DESIGN ENVIRONMENT													
Finite Element IDE (with 2D/3D modeling)	●		●		●	●							
Finite Difference IDE (with 2D/3D modeling)				●					●		●	●	
Hierarchical Schematic Editor							●	●					
GENERAL													
HPC-ready / compatible with cloud providers				●					●				
PIC Element Library							●						
Supports CML development and distribution		●					●						
Automated CML generation		●											
Version controlled CMLs		●											
Structured input with template and data validation		●											
Automated test case generation		●											
IP protected CMLs		●					●						
INTERCONNECT and Verilog-A models from single source		●					●						●
Leverage build-in analysis from 3rd party EDA tools													●
Design and model using Verilog-A in 3rd party EDA tools													●
Available in Ansys Cloud	●	●	●	●	●	●	●		●	●	●	●	●
Ansys Cloud HPC Services Integration	●		●	●	●	●			●	●	●	●	
GENERAL SOLVER CAPABILITIES													
Charge transport (electrostatic potential and drift diffusion)	●												
Self-consistent heat/charge modeling	●					●							
Heat transport (heat flux, convention, and radiation)						●							
Finite Element Eigenmode Solver				●	●								
Discontinuous Galerkin Time Domain Solver			●										
Finite Difference Time Domain solver				●									
Finite Difference Eigenmode solver				●					●				
Bidirectional eigenmode expansion									●				
2.5D variational FDTD (varFDTD)									●				
Advanced Finite Difference Conformal Meshing				●					●			▲	

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GENERAL SOLVER CAPABILITIES													
Quantum mechanical band structure calc. (kp method)										●			
Waveguide and band diagram calculation										●			
Gain and spontanious emission calculation										●			
Temperature, strain, and field effects										●			
Closed form solver for rapid multilayer thin-film analysis											●	●	
Planewave and dipole illumination											●	●	
Capture Interface and microcavity effects											●	●	
Circuit frequency domain analysis							●	●					
Circuit transient mode simulator							●						
Circuit transient block mode simulator							●						
Circuilt multi-mode and multi-channel support							●	●					
Circuit mixed signal representation							●						
Laser library with TWLM solver							●						
System library including optical fibre, FEC and MLSE models							●						
Rigorous Coupled-Wave Analysis Solver												●	
Waveguide Bend Calculation for Bend Loss and Ring Analysis					●								
Quantum Logic Gate Simulation								●					
Quantum Loss Extraction								●					
MATERIALS SELECTION & RELATED TOOLS													
Comprehensive Material Models	●		●	●	●	●			●	●	●	●	
Multi-coefficient Models			●	●					●				
Non-linearity Modeling				●	▲				▲				
Anisotropy Modeling				●	▲				▲		●		
OPTIMIZATION													
Inverse Design with lumopt				●					▲				
Particle Swarm	●		●	●	●	●	●		●		▲	▲	
Parameter Sweeps	●		●	●	●	●	●		●	▲	▲	▲	
POST PROCESSING													
Far-Field Projection			●	●	●				●				
Band Structure Analysis				●									
Bidirectional Scattering Distribution Function				●									

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POSTPROCESSING													
Q-Factor Analysis			●	●									
Charge Generation Rate			●	●									
Bend Loss Analysis									●				
Overlap analysis									●				
Model area analysis									●				
Helical waveguides									●				
Extract gain/absorption and spontaneous emission coefficients for TWLM model (INTERCONNECT)										●			
Statistical support (Monte-Carlo Analysis)	●		●	●	●	●	●		●				
Statistical Support (Corner analysis)							●						
Small-signal analysis	●												
Steady-state and transient analysis	●					●							
Laser Self-Heating							●						
TOOL INTEROPERABILITY													
Multiphysics Solver Interoperabilty	●		●	●	●	●			●				
Automation API (Lumerical script/Matlab/Python)	●		●	●	●	●	●		●	●	●	●	
Circuit electronic photonic co-simulation (3rd party tools)							●						●
optiSLang Integration	●		●	●	●	●	●		●	●	●	●	
Shared workflows with Speos				●							●	●	
Speos Surface Models: BSDF/BRDF format exchange				●									
Speos Surface Models: Diffraction Grating SOP Plugin				●							●	●	
Optics Interoperability Workflows with Speos and/or Zemax				●							●	●	
Process Enabled Photonic Component Design Workflows	●		●	●	●	●			●				
Virtuoso layout integration				●					●				
KLayout integration							●						

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