Sigmadyne™

# SigFit™ Optomechanical Software

## Our software adds insight and capability to the optomechanical design process by linking mechanical and optical analysis.

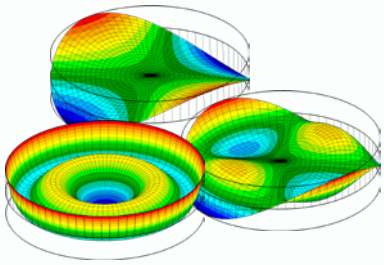
### Comprehensive Interfaces to Market Leading Software

Finite element analysis: **NASTRAN®, ANSYS®, ABAQUS®, SolidWorks® Simulation™, and others**

Optical analysis: **Code V™, Zemax™ Optic Studio®, and OSLO™**

Graphical plotting: **Patran™, FEMAP™, ANSYS® Mechanical™, ABAQUS/CAE™, NX™, PNG Files, and others**

**Surface Fitting** — Fits polynomials to deformed surfaces from FEA, test data, or tabular data. ▮ Fits Zernike, Annular Zernike, Aspheric, XY, Forbes, Fourier-Legendre, Legendre, Chebyshev. ▮ Calculates rigid-body motions and surface error as described by polynomial fits, interpolation, RMS, and peak-to-valley. ▮ Writes macro files of optomechanical disturbances for Code V™, Zemax™, or OSLO™. ▮ Performs Monte Carlo analyses of variations predicted by FEA.

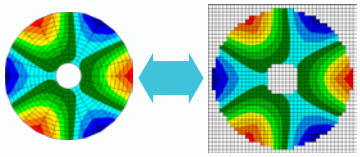


**Harmonic, Random, Transient Response Analysis** — Simulates dynamic response given modal FEA results. ▮ Calculates surface motions, surface error, line-of-sight error, MTF due to random jitter line-of-sight error, and wavefront error. ▮ Outputs harmonic and PSD response functions. ▮ Identifies modal contributions to surface error, line-of-sight error, and wavefront error responses to assist in performance diagnosis.

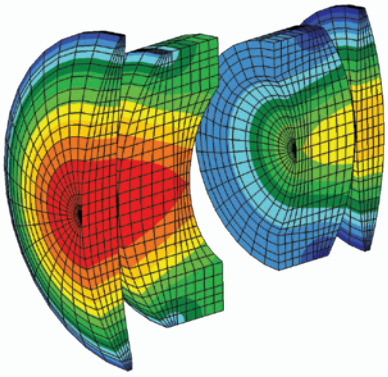
**Optimization I/F** — Supports optimization in FEA. ▮ Writes equations in FE software format for surface error, line-of-sight error, and wavefront error. ▮ Allows optical performance to be constraints or objective in optimization. ▮ Useful for designing lightweight mirrors, mounts, and metering structures.

**Active Control** — Solves for actuator forces/strokes to minimize surface or wavefront error RMS. ▮ Accepts specification of actuator influence functions from FEA or test data. ▮ Calculates actuator strokes and characterizes corrected surface error and wavefront error. ▮ Calculates actuator stroke, surface RMS, polynomial coefficients. ▮ Optimizes actuator placements using genetic optimization.

**Interpolation** — Interpolates between finite element models and interferogram array files. ▮ Reads test interferogram arrays as input to surface fitting and active control analyses. ▮ Outputs interferogram array files from surface fitting and active control analyses.



**Thermo-Optic, Stress-Optic, Stress-Birefringence Effects** — Computes refractive index changes. ▮ Creates user defined gradient index lenses or OPD maps in optical analysis to represent dn/dT and dn/dσ effects from FEA. ▮ Calculates stress induced birefringence from FEA results.



**Line-of-Sight (LoS) Error** — Computes line-of-sight errors due to static and dynamic loads. ▮ Calculates and writes line-of-sight coefficients in FEA software format. ▮ Calculates MTF response due to jitter in random analysis.

**Wavefront Error** — Computes wavefront error due to mechanical disturbances with link to optical analysis model or sensitivity file. ▮ Allows prediction of wavefront error due to vibration environments.



**Call 585.235.6892 for more information or a trial license. Visit sigmadyne.com for white papers and more information on SigFit.**

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