

# Stanley Osher

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Stanley Osher is awarded the Gauss Prize for his influential contributions to several fields in applied mathematics, and his far-ranging inventions have changed our conception of physical, perceptual, and mathematical concepts, giving us new tools to apprehend the world.

Stanley Osher has made influential contributions in a broad variety of fields in applied mathematics. These include high resolution shock capturing methods for hyperbolic equations, level set methods, PDE based methods in computer vision and image processing, and optimization. His numerical analysis contributions, including the Engquist-Osher scheme, TVD schemes, entropy conditions, ENO and WENO schemes and numerical schemes for Hamilton-Jacobi type equations have revolutionized the field. His level set contributions include new level set calculus, novel numerical techniques, fluids and materials modeling, variational approaches, high codimension motion analysis, geometric optics, and the computation of discontinuous solutions to Hamilton-Jacobi equations; level set methods have been extremely influential in computer vision, image processing, and computer graphics. In addition, such new methods have motivated some of the most fundamental studies in the theory of PDEs in recent years, completing the picture of applied mathematics inspiring pure mathematics.

Stanley Osher has unique mentoring qualities: he has influenced the education of generations of outstanding applied mathematicians, and thanks to his entrepreneurship he has successfully brought his mathematics to industry.

Trained as an applied mathematician and an applied mathematician all his life, Osher continues to surprise the mathematical and numerical community with the invention of simple and clever schemes and formulas. His far-ranging inventions have changed our conception of physical, perceptual, and mathematical concepts, and have given us new tools to apprehend the world.