What is the h-principle?
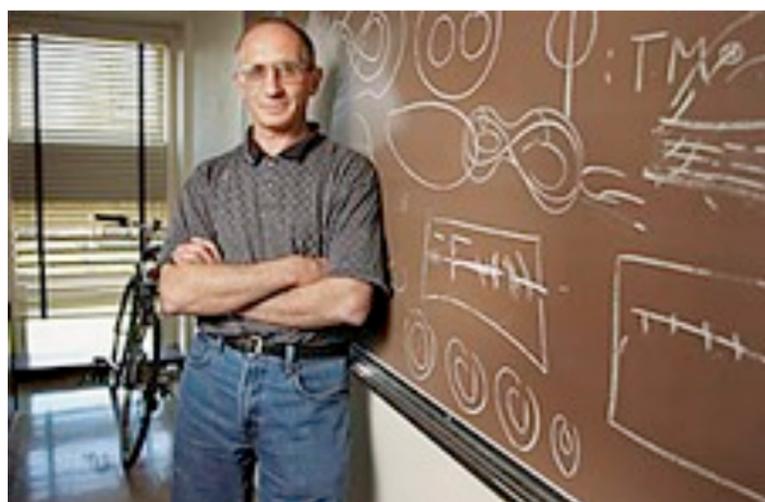
## Yakov Eliashberg

**Tuesday   May 5, 2015   5:00 PM
LSC 100   Arvo J. Oopik 1978 Auditorium
Class of 1978 Life Sciences Center**

V. Borrelli, S. Jabrane, F. Lazarus, B. Thibert

In geometry and topology, as well as in applications of Mathematics to Physics and other areas, one often deals with a system of differential equations and inequalities. By replacing derivatives of unknown functions by independent functions one gets a system of algebraic equations and inequalities. The solvability of this algebraic system is necessary for the solvability of the original system of differential equations. It was a surprising discovery in the 1950-60s that there are geometrically interesting classes of systems for which this condition is also sufficient. This led to counter-intuitive results, like Steven Smale's famous inside-out "eversion" of the sphere or John Nash's isometric (i.e. preserving lengths of all curves) embedding of the unit sphere into a ball of an arbitrary small radius. Since that time many more examples of this phenomenon continue to be discovered.

Yakov Eliashberg is the Herald L. and Caroline L. Ritch Professor of Mathematics at Stanford University. His research interests lie in symplectic and contact geometry, several complex variables, singularity theory and low-dimensional topology. He is one of the founders of symplectic topology, a new and active area of research which emerged in the 1980s and found important applications in other areas of mathematics and theoretical physics. Professor Eliashberg is a member of the National Academy of Sciences.
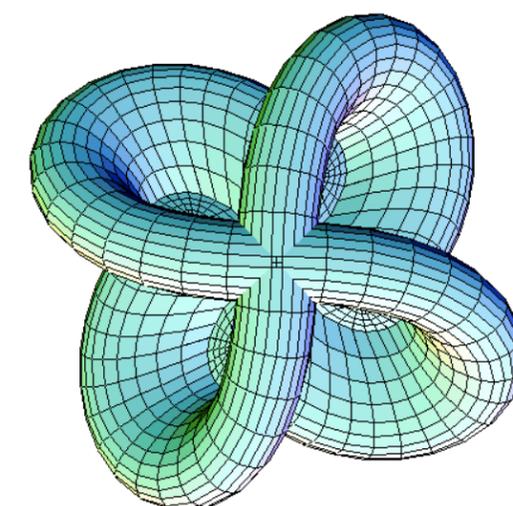
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