

## The 2003 Clay Research Awards:

Richard Hamilton

Terence Tao

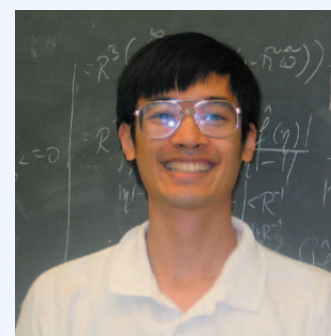
Each year CMI recognizes outstanding achievements in mathematics with the Clay Research Award. In 2003, the award went to Richard Hamilton for his visionary work on Ricci flow and to Terence Tao for his fundamental contributions to analysis and other fields.

Richard Hamilton of Columbia University was recognized for his introduction of the Ricci flow equation and his development of it into one of the most powerful tools in geometry and topology. The Ricci flow equation is a system of nonlinear partial differential equations somewhat analogous to the classical (scalar) heat equation. However, the quantity that evolves is not temperature, but rather the metric on a manifold, that is, its geometry. In his seminal 1982 paper, Hamilton showed that a compact manifold with positive Ricci curvature evolves toward a state of constant curvature. This theorem is the basis of his visionary program to prove William Thurston's geometrization conjecture, of which the celebrated Poincaré conjecture is a special case. Recent work by Grigori Perelman of St. Petersburg has spectacularly advanced these ideas and brought us much closer to an understanding of the conjectures.

Terence Tao of UCLA was recognized for his groundbreaking work in analysis, notably his optimal restriction theorems in Fourier analysis, his work on the wave map equation (the hyperbolic analogue of the



*Richard Hamilton*  
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*Terence Tao*

harmonic map equation), his global existence theorems for KdV type equations, as well as significant work in quite distant areas of mathematics, such as his solution with Allen Knutson of Horn's conjecture, a fundamental problem about hermitian matrices that goes back to questions posed by Hermann Weyl in 1912.

The awards were presented at the CMI Annual Meeting on November 14, 2003. MIT hosted the event, which was held at its Media Lab.



*Richard Hamilton receiving the award from CMI President Jim Carlson*  
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*Shing-Tung Yau recognizing the contributions of Richard Hamilton*  
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*David Jerison, who received Terence Tao's award on his behalf, joined by Landon T. Clay.* © 2003 Allison Evans