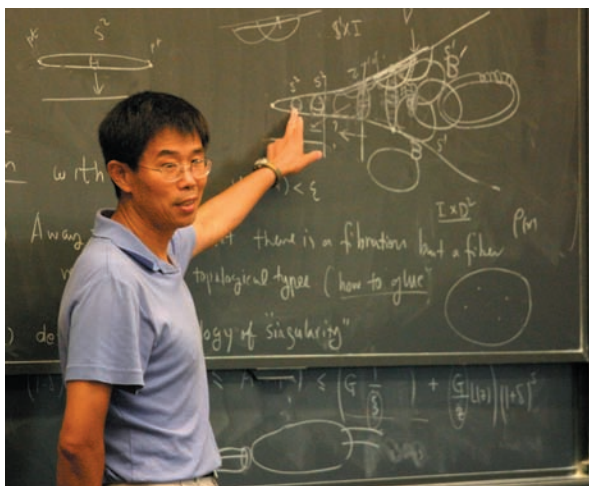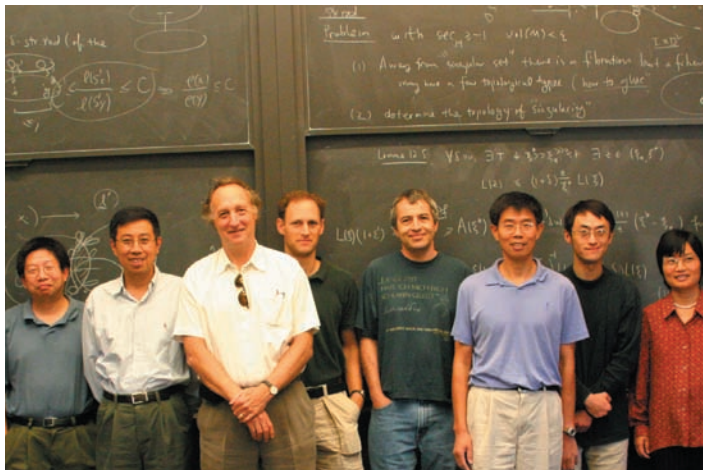# Workshop on Perelman's Surgery Procedure

Xiaochun Rong discussing Perelman's work.

Grigory Perelman's work announcing a proof of the Poincaré conjecture using the Ricci flow methods pioneered by Richard Hamilton has attracted great interest in the mathematical community. In November 2002, March 2003, and July 2003, Perelman posted his results at arXiv.org, and in April of 2003 he lectured at MIT and Stony Brook. Since then several conferences and workshops have been organized on Ricci flow and its applications — at AIM, MSRI, and elsewhere.

For its part, the Clay Mathematics Institute has undertaken a number of initiatives to better understand Perelman's breakthrough. First was its appointment of Bruce Kleiner (Feb–August, 2004) and John Lott (July–December, 2004) as Research Scholars. Freed from other duties, they could devote their full attention to writing a set of detailed notes on Perelman's second paper, "Ricci flow with surgery on three-manifolds." Kleiner and Lott had previously written a set of detailed notes on Perelman's first paper, "The entropy formula for the Ricci flow and its applications." See www.math.lsa.umich.edu/ research/ricciflow/ perelman.html.

Second was its workshop on Perelman's Surgery Procedure held at Princeton University, Aug. 25 –Sept. 4, 2004,

organized by John Lott (U Michigan) and Gang Tian (Princeton). Its aim was to bring together a small group of experts who had already worked through Perelman's articles for an intense and thorough study of the Ricci flow with surgery paper. The other invited participants were Yu Ding (NYU), Bruce Kleiner (U Michigan), John Lott (U Michigan), Peng Lu (University of Oregon), John Morgan (Columbia), Natasa Sesum (NYU), Gang Tian (Princeton University), Guofang Wei (University of California, Santa Barbara). The participants included one graduate student and one postdoc.

Bruce Kleiner and Yu Ding.

Each day of the worksop, assignments were made to present a part of the paper; the next day the mathematical arguments presented were subject to the crucible of public examination and discussion — at times quite lively. Much progress was made.

Peng Lu, Gang Tian, John Morgan, Bruce Kleiner, John Lott, Xiaochun Rong, Yu Ding, and Guofang Wei. Not pictured: Natasa Sesum.

Perelman's work will also be the subject of CMI's annual summer school, to be held this June 20—July 15, at MSRI in Berkeley.. The organizers are Gang Tian, John Lott, Tobias Colding, Jim Carlson, David Ellwood and Hugo Rossi. See www.claymath.org/ summerschool.