CHARLES PHELPS TAFT RESEARCH CENTER
at the University of Cincinnati

Taft Lecture

Distinguished Professor
Gaven J Martin
Institute for Advanced Study
Massey University
Albany, New Zealand

Thursday October 22
4:00–4:50 p.m.
The Revolution in Modern Geometry

Recent advances in mathematics have changed our perspective on geometry and its interaction with the world that we live in. We relate aspects of these advances—in a general way—starting from the beginning (why is Euclid's Elements the second best seller of all time?) and discussing topics such as hyperbolic geometry and groups of tilings of Euclidean and hyperbolic spaces. Ultimately we arrive at Perelman's results and our recent solution of a problem of Siegel from 1945. The latter is to identify the smallest regular tiling (i.e., crystallographic group) of hyperbolic 3-space. This non-technical talk is intended for a general audience.

Friday October 23
3:00–3:50 p.m.
PDEs, Conformal Geometry, and the Hilbert Smith Conjecture

The governing equations for the theories of conformal geometry and non-linear science have been much studied. Despite significant advances in the theory of these non-linear elliptic equations, e.g. as pertaining to regularity, nothing much is known about existence. Here we give a proof of uniqueness that delves into the version of Hilbert's 5th problem (more correctly, the Hilbert Smith Conjecture) about topological transformation groups. We solve this problem for sufficiently regular (quasiconformal) groups.

Both lectures will be held in 527 Old Chemistry Building

Sponsored by the Taft Research Center and the Department of Mathematical Sciences

All lectures are held at Taft House at Stratford Heights 2625 Clifton Ave. unless otherwise noted.
For questions, please call 556-0675.
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