SEMINÁRIO

8 de Abril de 2008
(Departamento de Matemática, sala Sousa Pinto, 14:30-15:30)

Título. Euler: Life, the universe, and optimization.

Orador. Prof. Francis Clarke
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Resumo.

Leonhard Euler, who would be 300 years old if he had not unfortunately died, was the preeminent mathematician of the 18th century. His many fundamental contributions range from number theory to geometry, differential equations to infinite series, optimization to probability, optics to mechanics.

Euler may not have been the most colorful scientist. He was not persecuted by the Church, no apple fell on his head, he did not die in a duel. And he suffered from a good and gentle nature, unlike his contemporaries Maupertuis and Lagrange (who also figure in our story). Yet he is largely responsible for a daring and crucial idea, the Principle of Least Action. This says, for example, that a ball (or a pendulum, or a planet) follows the path that it does because a certain quantity is minimized.

The mathematical part of this non-technical talk focuses on Euler's work in the calculus of variations. We also introduce the modern face of the subject: optimal control theory, and we highlight the issue of nonsmoothness, a feature of mathematics today that Euler might have found surprising. We shall see that it plays a role in questions as diverse as designing a robot, fishing for whales, or fleeing a crocodile...

Ciclo de Seminários do CEOC