Monday—March 26, 2012
12:00 to 12:50 p.m.

E-575

Number Theory & Combinatorics Seminar

UNIVERSITY OF LETHBRIDGE

Mathematics & Computer Science

THE DEATH OF SYNTHETIC GEOMETRY

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Abstract:

Since antiquity people have been intrigued by problems like the "problems of Appolonius:" construct a circle tangent to three given circles. This specific problem can be solved using compass and straight edge. Jacob Steiner in 1848 pointed out that when the circles are replaced by arbitrary conics, these problems become more involved. For one thing it should take 5 conics, rather than 3, to determine the unknown conic. Furthermore, the five conics rarely determine a single conic, which raises the question, known as the Steiner problem, of how many conics are tangent to 5 given conics. Steiner conjectured that there are 6^5=7776 conics, but did not elaborate much on this conjecture. This was proved by Johann Bischoff in 1859, but it was soon realized that this is not the right answer to the question.

In this talk I will explain how do we get this answer, why this is not the right answer, how to get the right answer, and why this is an example of a problem responsible for killing synthetic geometry, and for that matter, what do I mean by synthetic geometry.

Some refreshments will be provided.

Student seminar website:
http://www.cs.uleth.ca/~kadiri/student-seminar.html