BI-CO MATHEMATICS COLLOQUIUM

Professor Charles Livingston
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"Four-dimensional aspects of classical knot theory"

Monday, November 6, 2006

Talk at 4:15 – Park 328
Tea at 3:45 – Park 355, Math Lounge

Abstract:

 Classical knot theory studies ways in which the circle can be embedded in 3-space. There is a parallel theory of knotted spheres and surface in 4-space. In this talk I will give examples of this 4-dimensional knotting and then will survey some of the interplay between these two theories. In particular, there is an equivalence relation on the set of classical knots, "concordance," that arises from this interplay. The standard operation of adding knots together, connected sum, induces a group operation on the set of concordance classes. Much of the structure of this concordance group is unknown; I will describe what is known, recent work on the subject, and some of the problems that remain.

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