De: crm@crm.umontreal.ca
Objet: COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC (26/03/2015, Steve Boyer)
Date: 23 mars 2015 09:55
À: activites@CRM.UMontreal.CA

Le café sera servi à 15h30 / BURN 1024 /
Coffee will be served at 3:30 pm / BURN 1024.

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COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC - Montréal
http://www.crm.umontreal.ca/Colloques/colloqueSMQ-Montreal.html
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DATE :
Le jeudi 26 mars 2015 / Thursday, March 26, 2015

HEURE / TIME :
16 h / 4:00 p.m.

CONFERENCIER(S) / SPEAKER(S) :
Steve Boyer (UQAM)

TITRE / TITLE :
Left-orderings of groups and the topology of 3-manifolds

LIEU / PLACE :
McGill University, Burnside Hall, 805 rue Sherbrooke 0., Montréal, salle 920

RESUME / ABSTRACT :
Many decades of work culminating in Perelman's proof of Thurston's geometrisation conjecture showed that a closed, connected, orientable, prime 3-dimensional manifold W is essentially determined by its fundamental group $\pi_1(W)$. This group consists of classes of based loops in W and its multiplication corresponds to their concatenation. An important problem is to describe the topological and geometric properties of W in terms of $\pi_1(W)$. For instance, geometrisation implies that W admits a hyperbolic structure if and only if $\pi_1(W)$ is infinite, freely indecomposable, and contains no $\mathbb Z \oplus \mathbb Z$ subgroups. In this talk I will describe recent work which has determined a surprisingly strong correlation between the existence of a left-order on $\pi_1(W)$ (a total order invariant under left multiplication) and the following two measures of largeness for W:

a) the existence of a co-oriented taut foliation on W - a special type of partition of W into surfaces which fit together locally like a deck of cards.

b) the condition that W not be an L-space - an analytically defined condition representing the non-triviality of its Heegaard-Floer homology.

I will introduce each of these notions, describe the results which connect them, and state a number of open problems and conjectures concerning their precise relationship.