

PRIX



Université de Montréal
C.P. 6128, succ. Centre-ville
Montréal (Québec) H3C 3J7
Canada
Tél.: 514-343-7501
crm@crm.umontreal.ca

ANDRÉ-AISENSTADT PRIZE 2011

Joel Kamnitzer



UNIVERSITY OF
TORONTO



Representation theory of semisimple groups: classical, quantum, geometric, categorical

The representation theory of semisimple Lie groups is a classical subject going back to Weyl. In the 1980s, Drinfeld, Jimbo, Reshetikhin, and others invented a quantum version of this theory. These quantum groups were used by Reshetikhin and Turaev to construct knot and 3-manifold invariants.

Also during the 1980s and 1990s, two geometric approaches to the representation theory of semisimple groups emerged. The first approach, due to Lusztig, Ginzburg, Drinfeld, and Mirkovic-Vilonen, used the geometry of the affine Grassmannian. The second, due to Lusztig, Ginzburg, and Nakajima, used the geometry of quiver varieties. These geometric approaches led to further understanding of classical and quantum representation theory and in particular to the construction of canonical bases.

More recently, a new categorical representation theory of semisimple groups has been developed by Khovanov, Rouquier, and others. On one hand, this categorical representation theory leads to homological knot invariant such as Khovanov homology. On the other hand, the work of Vasserot-Varagnolo, Webster, and Cautis-Licata-Kamnitzer has provided a strong interaction between this categorical representation theory and geometric representation theory.

In my talk, I will attempt to survey these all these developments.

Le vendredi 18 février 2011

Friday, February 18, 2011

16h00 - 4:00 pm

Salle / Room 6214

Pavillon André-Aisenstadt,
2920, chemin de la Tour
Université de Montréal



activites@crm.umontreal.ca
<http://crm.math.ca/Kamnitzer>

Une réception suivra au Salon Maurice-L'Abbé (salle 6245).
A reception will follow at Salon Maurice-L'Abbé (Room 6245).