Emergent Research:

The PIMS Postdoctoral Fellow Seminar

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Isotropy of quadratic forms in characteristic 2

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ABSTRACT:
It is well-known that quadratic forms can be diagonalized over fields and that they are in a one-to-one correspondence with bilinear forms; the algebraic theory of quadratic forms is build on these two properties. But there is a catch -- they require division by two. Over a field of characteristic 2, neither of them is true, and the whole quadratic form theory needs to be rebuilt from scratch.
In the talk, we will give a brief introduction to the theory of quadratic forms in characteristic 2. Then we will focus on isotropy -- that is, whether we can find elements of the field on which the quadratic form in question gains the value zero. One of the classical problems is to describe, for any given quadratic form, "how much" it is isotropic over any field extension. We will see that there is basically only one type of field extensions that are relevant for this problem.

SPEAKER BIO:
Kristyna Zemková is a postdoctoral fellow at the University of Alberta, where she works with Stefan Gille and others in the algebraic theory of quadratic forms. She obtained a doctoral degree at the Technical University Dortmund in Germany; under the supervision of Detlev Hoffmann, she compared different equivalence relations of quadratic forms over fields of characteristic 2. She is also interested in quadratic forms from the point of view of algebraic number theory (that is, over rings of algebraic integers); this interest originates from her Master's studies at (and later collaboration with PhD students from) the Charles University in Czechia.

For more information and registration:
https://www.pims.math.ca/seminars/PIMSPDF

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