

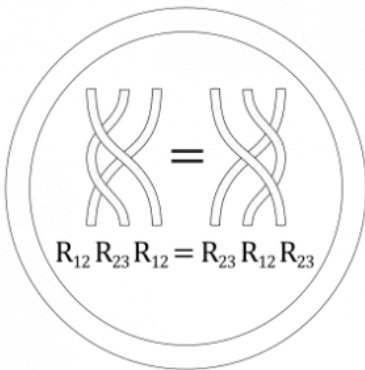
THE DEPARTMENT OF MATHEMATICAL SCIENCES PROUDLY PRESENTS

# COLLOQUIUM

SPRING 2022

## New approach for solving Yang-Baxter equation

Dr. Anna Zamojska-Dzienio  
Warsaw University of Technology



**March-8-2022**  
**10:30 am**

**Abstract**



The Yang-Baxter equation is a fundamental equation occurring in integrable models in statistical mechanics and quantum field theory. The equation looks very simple, but has profound implications for many areas of mathematics and physics. These include how waves behave in shallow water, the interaction of subatomic particles, the mathematical theory of knots, and string theory. Description of all possible solutions seems to be extremely difficult and therefore there were some simplifications introduced (set-theoretical solutions).

Biracks are algebras studied in low-dimensional topology which are in a one-to-one correspondence with set-theoretical non-degenerate solutions of the Yang-Baxter equation. This fact allows us to characterize such solutions in the language of biracks, applying the universal algebra tools. With these methods, many new results were obtained leading to a full description of new classes of solutions. We present some of them.

link: [meet.google.com/urm-rhmx-dhw](https://meet.google.com/urm-rhmx-dhw)

