# UNM-PNM STATEWIDE MATHEMATICS CONTEST LECTURE

## What do partitions count?

# Professor Natasha Rozhkovskaya

### Department of Mathematics

# Kansas State University

If you have a dollar bill, how can you change it into coins? For example, it can be four quarters, or two quarters and five dimes, or just a hundred cents…... These are examples of partitions, the ways to break a given integer number (in this case 100) into several integer parts. Today people uses partitions to count a variety of complicated things in modern science, such as states in Dirac positron theory in quantum mechanics, solutions of soliton equations, or different actions of symmetric groups. All these applications come from a lively and beautiful area of mathematics that generalizes the notion of symmetry. This area is called representation theory. At the lecture we will have a glimpse at the general ideas of representation theory and discuss the application of the partitions in classification of symmetries.

**About the speaker:** Professor Natasha Rozhkovskaya obtained her master degree from Moscow State University in 1997. She graduated from University of Pennsylvania with Ph.D in Mathematics in 2002. She did her postdocs in University of Wisconsin-Madison and Institute Henri Poincare. She is currently an associate professor in the Department of Mathematics, Kansas State University.

### Public Lecture in Science and Math Learning Center

### Saturday, February 1, 2020, Room 102 at 10am

### Refreshments served before lecture. All are welcome.

### http://mathcontest.unm.edu/