

Mathematical Physics seminar

Speaker: Sachin Gautam (Math, Ohio State)

Thursday, Dec 9, 2021
10:30 am-11:30 am
in person in UNIV 319

and on Zoom

<https://purdue-edu.zoom.us/j/>

Meeting ID: 953 1862 5523

Passcode: 184222

Title: R-matrices and Yangians

Abstract: An R-matrix is a solution to the Yang-Baxter equation (YBE), a central object in Statistical Mechanics, discovered in 1970's. The R-matrix also features prominently in the theory of quantum groups formulated in the eighties. In recent years, many areas of mathematics and physics have found methods to construct R-matrices and solve the associated integrable system.

In this talk I will present one such method, which produces meromorphic solutions to (YBE) starting from the representation theory of a family of quantum groups called Yangians. Our techniques give (i) a constructive proof of the existence of the universal R-matrix of Yangians, which was obtained via cohomological methods by Drinfeld in 1983, and (ii) prove that Drinfeld's universal R-matrix is analytically well behaved. This talk is based on joint works with Valerio Toledano Laredo and Curtis Wendlandt.