Seminar/Talk
Utility of integral representations for basic hypergeometric functions and orthogonal polynomials.

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Abstract: In this talk we describe the utility of integral representations for sums of basic hypergeometric functions. In particular, we use these to derive an infinite sequence of transformations for symmetrizations over certain variables which the functions possess. These integral representations were studied by Bailey, Slater, Askey, Roy, Gasper and Rahman and were also used to facilitate the computation of certain outstanding problems in the theory of basic hypergeometric orthogonal polynomials in the q-Askey scheme. We also generalize and give consequences and transformation formulas for some fundamental integrals connected to nonterminating basic hypergeometric series and the Askey-Wilson polynomials. We express a certain integral of a ratio of infinite q-shifted factorials as a symmetric sum of two basic hypergeometric series with argument q. The result is then expressed as a q-integral. Examples of integral representations applied to the derivation of generating functions for Askey-Wilson are given and, as well, the computation of a missing generating function for the continuous dual q-Hahn polynomials.

- **Data:** 27 Janeiro 2024, 14h30min;

- **Local:** Sala de Reuniões, Departamento de Matemática, UBI.