ERIC SCHOST, University of Western Ontario, London, ON
Conversion algorithms for orthogonal polynomials

Families of orthogonal polynomials satisfy recurrence relations which are often the key to the design of fast algorithms. In this talk, we consider conversion problems, from an orthogonal basis to the monomial basis and conversely. Using the recurrence relation on orthogonal polynomials, one easily comes up with efficient algorithms for the direct conversion. We propose a fast algorithm for the converse direction, exploiting classical continued fractions identities and algorithm transposition techniques to reach a quasi-linear complexity.

Joint work with Bruno Salvy and Alin Bostan.