

**On Freud-Sobolev type orthogonal polynomials: asymptotics and zeros****03.10****Lino Gustavo Garza Gaona***(Physics and Mathematics Department, Universidad de Monterrey, Mexico)***Time:** Tuesday 23.07., 16:00 - 16:30, Room HS 6

**Abstract:** In this contribution we consider sequences of monic polynomials orthogonal with respect to the discrete Sobolev type inner product involving a quartic potential

$$\langle f, g \rangle_1 = \int_{\mathbb{R}} f(x)g(x)|x|^{2\lambda+1}e^{-x^4+tx^2}dx + M_0f(0)g(0) + M_1f'(0)g'(0).$$

In particular, we obtain algebraic properties related to their zeros, such as equations of motion with respect to the parameter  $t$ , and monotonicity results when  $M_0$ ,  $M_1$  tend to infinity. We also obtain some asymptotic properties for the coefficients on the recurrence relation that the Sobolev-type orthogonal polynomials satisfy.