p-adic torsion growth in p-adic towers

Jun Ueki

Ochanomizu University

As Rozansky and Saleur pointed out in 1992, the Alexander polynomial always raises an important toy model.
(1) Let p be a prime number. Kisivelsky's theorem asserts that in a Zp-extension of a global field, the class numbers p-adically converge. A similar theorem holds in a Zp-cover of a 3-manifol,d and the limit coincides with Kionke's p-adic torsion. We establish explicit formulas for twist knots and elliptic curves using the Alexander/characteristic polynomials and present thorough numerical investigations.Particularl interest may be found in the cases where the non-p torsions converge to transcendental numbers and the Iwasawa nu-invariants are large. (Joint with Hyuga Yoshizaki)
(2) Cuoco--Monskygeneralized Iwasawa's class number formula for Zp^d-extensions, d being a positive integer. We present its analogue for links in a rational homology 3-sphere using the multivariable Alexander polynomials and ask a subtle question on Greenberg's property. (Joint with Sohei Tateno)