Bologna Workshop on:
CFT AND INTEGRABLE MODELS
and their applications from gauge/gravity dualities to statistical mechanics and quantum information

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Elliptic quantum toroidal algebra $U_{q,t,p}(\mathfrak{gl}_{1,tor})$ and Affine quiver gauge theories

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We introduce a new elliptic quantum toroidal algebra $U_{q,t,p}(\mathfrak{gl}_{1,tor})$ and show some interesting representations including the level (0,0) representation given by the elliptic Ruijsenaars difference operators. We also construct intertwining operators of the $U_{q,t,p}(\mathfrak{gl}_{1,tor})$ -modules w.r.t. the Drinfeld comultiplication and give a realization of the affine quiver W-algebra $W_{q,t}(\Gamma(A_0))$ proposed by Kimura–Pestun. This realization turns out to be useful to derive the Nekrasov instanton partition functions, i.e. the χ_y - and elliptic- genus of the moduli spaces, of the 5d and 6d lifts of the 4d $calN = 2^*$ theories and provide a new Alday–Gaiotto–Tachikawa correspondence.

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