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Tian Yang*, TAMU, college station, TX 77843. *Volume conjectures for Reshetikhin-Turaev and Turaev-Viro invariants.*

In a joint work with Qingtao Chen, we conjecture that at the root of unity $\exp(2\pi i/r)$ instead of the usually considered root $\exp(\pi i/r)$, the Turaev- Viro and the Reshetikhin-Turaev invariants of a hyperbolic 3-manifold grow exponentially with growth rates respectively the hyperbolic and the complex volume of the manifold. This reveals a different asymptotic behavior of the relevant quantum invariants than that of Wittens invariants (that grow polynomially by the Asymptotic Expansion Conjecture), which may indicate a different geometric interpretation of the Reshetikhin-Turaev invariants than the $SU(2)$ Chern-Simons gauge theory. Recent progress toward these conjectures will be summarized, including a joint work with Renaud Detcherry and Effie Kalfagianni. (Received June 27, 2017)