# Heegaard-type presentations of branched standard spines and Reidemeister-Turaev torsion

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Reidemeister-Turaev torsion is an invariant of a 3-manifold $M$ equipped with a Spin$^c$ structure, one representation of which is a homology class of a non-singular vector field on $M$. In this talk, we introduce a way to represent a branched standard spine, which can be regarded as a combinatorial presentation of a Spin$^c$ structure on a 3-manifold, as a Heegaard diagrams with "mark", and explain an accessible way to compute the invariant using this presentation. We also explain some interesting behavior of this invariant by using examples, and relation to Seiberg-Witten invariant.