Categorification of the Colored Jones Polynomial and Rasmussen Invariant of Links

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Abstract. We define a family of formal Khovanov brackets of a colored link depending on two parameters. The isomorphism classes of these brackets are invariants of framed colored links. The Bar-Natan functors applied to these brackets produce Khovanov and Lee homology theories categorifying the colored Jones polynomial. Further, we study conditions under which framed colored link cobordisms induce chain transformations between our formal brackets. We conjecture that for special choice of parameters, Khovanov and Lee homology theories of colored links are functorial (up to sign). Finally, we extend the Rasmussen invariant to links and give examples where this invariant is a stronger obstruction to sliceness than the multivariable Levine–Tristram signature.