

## Some $q$ -series conjectures related to Rogers-Ramanujan type identities of Kanade and Russell

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**Abstract:** In 2014, and in follow-up work in 2018, Kanade and Russell conjectured a large number of identities of the Rogers-Ramanujan type. Recently, in joint work with Kathrin Bringmann and Karl Mahlburg, we proved seven of their conjectures. Rather than focus on the proven identities, here we discuss some conjectural identities for certain  $q$ -hypergeometric series that came out of a reduction of other conjectures of Kanade and Russell. In these cases, the series can be expressed as  ${}_2\phi_1$  series, rather than multi-sums, and the result should be a simple infinite product. While this sounds quite simple, somehow a full proof has eluded us.