1125-05-1414 **William J Keith*** (`wjkeith@mtu.edu`), Fisher 316, 1400 Townsend Drive, Houghton, MI 49931.
Parity similarity formulas for partitions and multipartitions.

We produce several formulas relating the parity of the partition function in arithmetic progressions to parities of partition and multipartition functions. With $p_t(n)$ the number of t-multipartitions of n, these formulas are of the type

$$q \sum_{n=0}^{\infty} p_t(an+b)q^n \equiv \frac{1}{(q;q)_\infty^{at}} + \frac{1}{(q^a;q^a)_\infty^{t}} \pmod 2$$

as well as similar formulas with more terms. We use combinatorial reasoning and recent work of Radu on Ramanujan-Kolberg type identities to prove our results. The list of identities obtained so far is strongly suggestive of an infinite family, and several corollaries can be drawn that may be useful in investigations of the parity of the partition function more generally.

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