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Badal Joshi*, bjoshi@csusm.edu, and **Anne Shiu**. *Identifying multistationary reaction networks*. Preliminary report.

It is an open problem to identify reaction networks that admit multiple positive steady states. Criteria such as deficiency theory and Jacobian criterion help rule out the possibility of multiple steady states. But these tests are not sufficient to establish multistationarity. For fully open networks, we can establish multistationarity by relating the steady states of a reaction network with those of its component “embedded networks”. We refer to the multistationary fully open networks that are minimal with respect to the embedding relation as atoms of multistationarity. We identify some families of atoms of multistationarity and show that there exist arbitrarily large (in species, reactions) such atoms. We also classify small reaction networks (not necessarily fully open) by multistationarity. (Received February 12, 2016)