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Anne Shiu* (annejls@math.berkeley.edu) and **Bernd Sturmfels**. *Siphons in biochemical reaction systems: an algebraist's point of view.*

Siphons in a biochemical reaction system are subsets of the species that have the potential of being absent in a steady state. We characterize minimal siphons in terms of primary decomposition of binomial ideals, explore the underlying geometry, and demonstrate the computation of siphons using computer algebra software. This leads to a new method for determining whether given initial concentrations allow for various boundary steady states. (Received July 26, 2009)