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Rational steady state parametrizations for biochemical reaction systems

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Classical results give structural conditions under which the steady state set of a (bio)chemical reaction system has a monomial parametrization. This property has been studied extensively in the context of characterizing a mechanism's capacity for mono- and multi-stationarity. In this talk, we generalize the existing structural framework and derive sufficient conditions for guaranteeing that the steady states have a rational parametrization. Applications include the EnvZ-OmpR osmoregularity pathway and the Shuttled WNT signalling pathway.

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