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Sebastien Roch*, 480 Lincoln Dr, Madison, WI 53706, and **Kun-Chieh Wang**. *Circular Networks from Distorted Metrics*.

Trees have long been used as a graphical representation of species relationships. However complex evolutionary events, such as genetic reassortments or hybrid speciations, do not fit into this elementary framework. Circular networks are a natural generalization of trees. Although such networks do not explicitly model specific evolutionary events, their straightforward visualization and fast reconstruction have made them a popular exploratory tool to detect network-like evolution. Standard reconstruction methods for circular networks, such as Neighbor-Net, rely on an associated metric estimated from DNA sequences, which leads to a key difficulty: distantly related sequences produce statistically unreliable estimates. In the tree case, robust reconstruction methods have been developed using the notion of a distorted metric, which captures the dependence of the error in the distance through a radius of accuracy. Here we design the first circular network reconstruction method based on distorted metrics. The analysis of its radius of accuracy highlights the important role played by the maximum incompatibility, a measure of the extent to which the network differs from a tree. (Received January 29, 2019)