

We design a critically sampled compact-support biorthogonal transform for graph signals, via graph filterbanks. Instead of partitioning the nodes in two sets so as to remove one every two nodes in the filterbank downsampling operations, the design is based on a partition of the graph in connected subgraphs. Coarsening is achieved by defining one “supernode” for each subgraph and the edges for this coarsened graph derives from the connectivity between the subgraphs. Unlike the “one every two nodes” downsampling on bipartite graphs, this coarsening operation does not have an exact formulation in the graph Fourier domain. Instead, we rely on the local Fourier bases of each subgraph to define filtering operations. We apply successfully this method to decompose graph signals and show promising performance on compression and denoising.