Shifted tiled−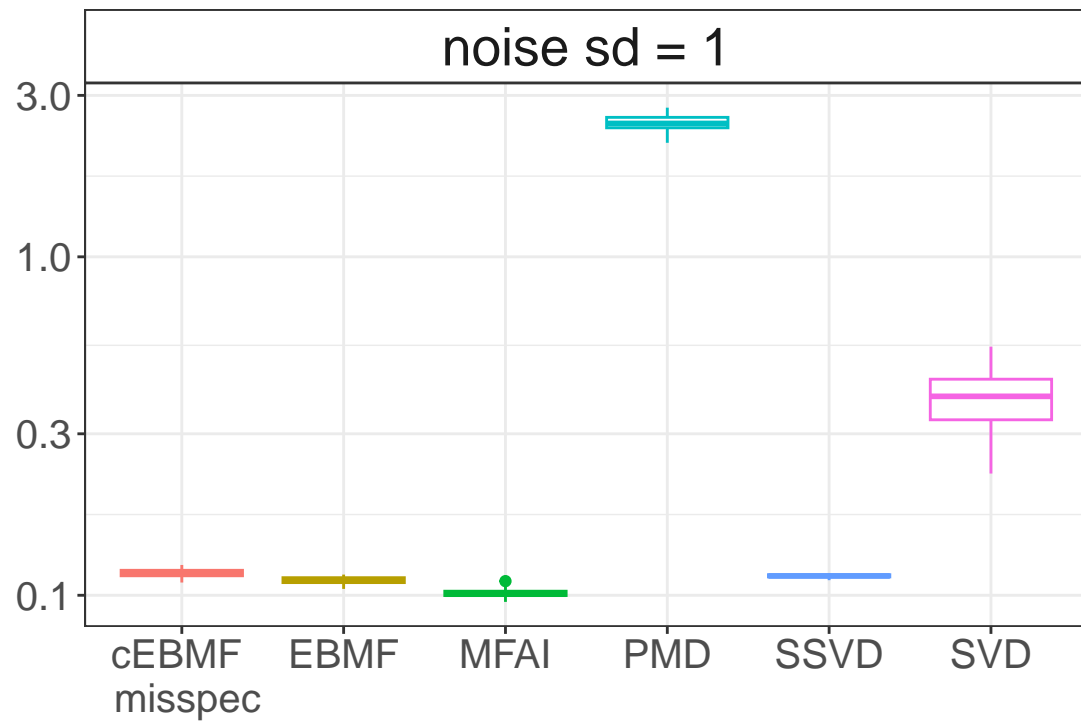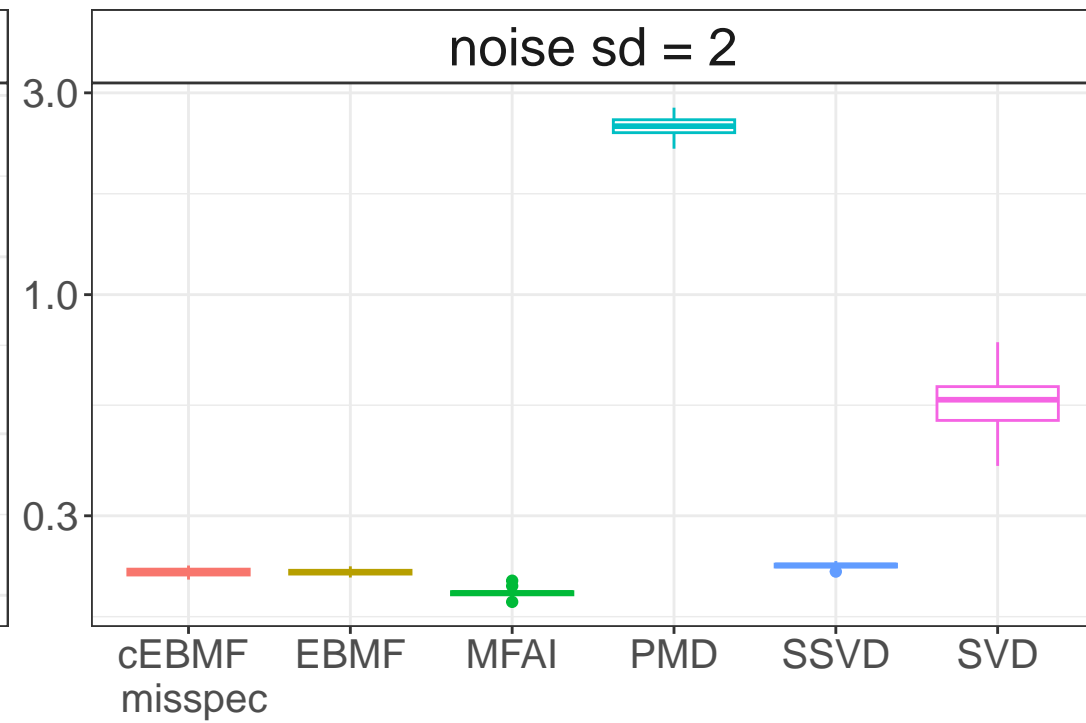clustering model