ABSTRACT: Fast MRI techniques have been developed to shorten scan time, reduce motion artifacts and measure the dynamic activity. Echo Planar Imaging (EPI), which is an MRI pulse sequence allowing the collection of 2D data after a single RF excitation, can significantly shorten acquisition time (e.g., < 100 msec per 2D image), decrease motion artifact and image rapid physiologic processes. EPI can be further accelerated with two recently developed techniques, multi-band imaging (MB) and parallel SENSitivity Encoding Imaging (SENSE). However, images reconstructed from these accelerated MRI are prone to various types of aliasing artifact, and thus advanced reconstruction procedures are needed to produce high-quality images from accelerated scans.