

## SUPPORTING INFORMATION FOR

### Automated High Order Shimming for Neuroimaging Studies

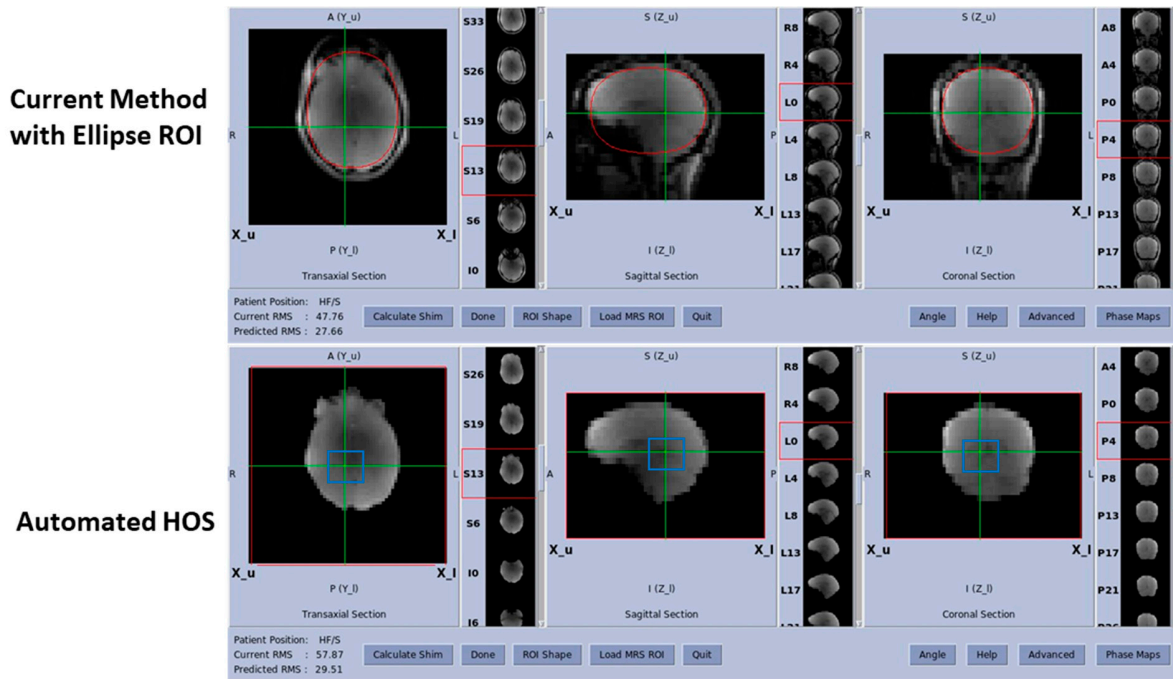


Figure S1. Selection of shim ROI. The current HOS software needs manual selection of ellipse or rectangular ROI (top). autoHOS (bottom) automatically shims the whole brain (red box). It also supports the manual selection of smaller ROI (blue box) for applications such as single-voxel MRS

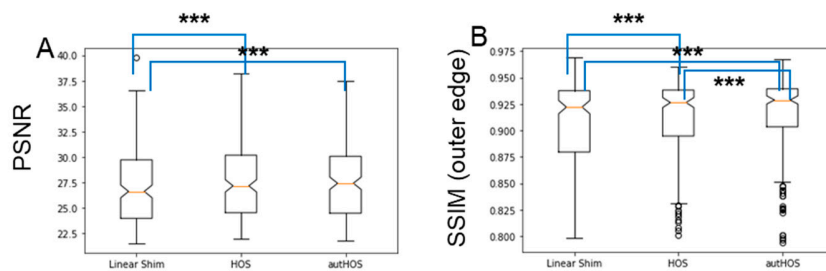


Figure S2. **HOS and autoHOS reduces EPI image distortions at 7T.** A and B illustrate comparisons of global PSNR and SSIM of outer brain contour, respectively. (\*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ )

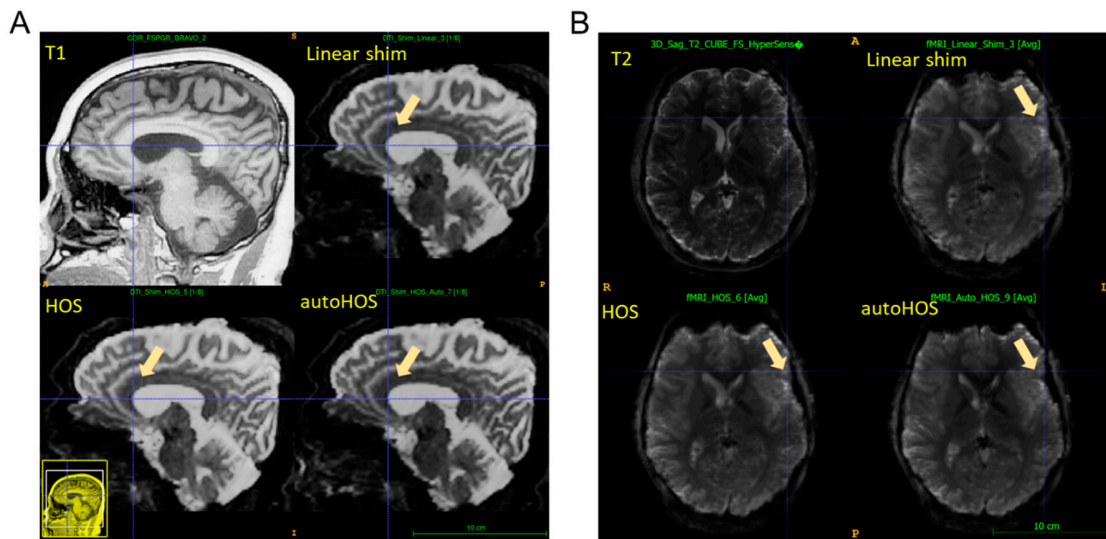


Figure S3. Representative EPI images acquired with linear shimming, HOS, and autoHOS at 3T (A) and 7T (B)

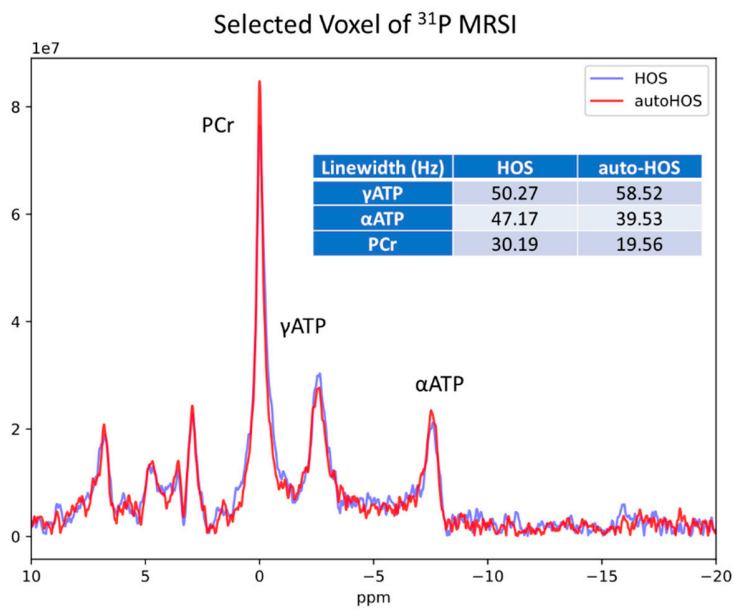


Figure S4. Selected voxel ( $8.3 \times 8.3 \times 8 \text{ cm}^3$ ) of  $^{31}\text{P}$  MRSI lineshape comparison between HOS and autoHOS at 7T.