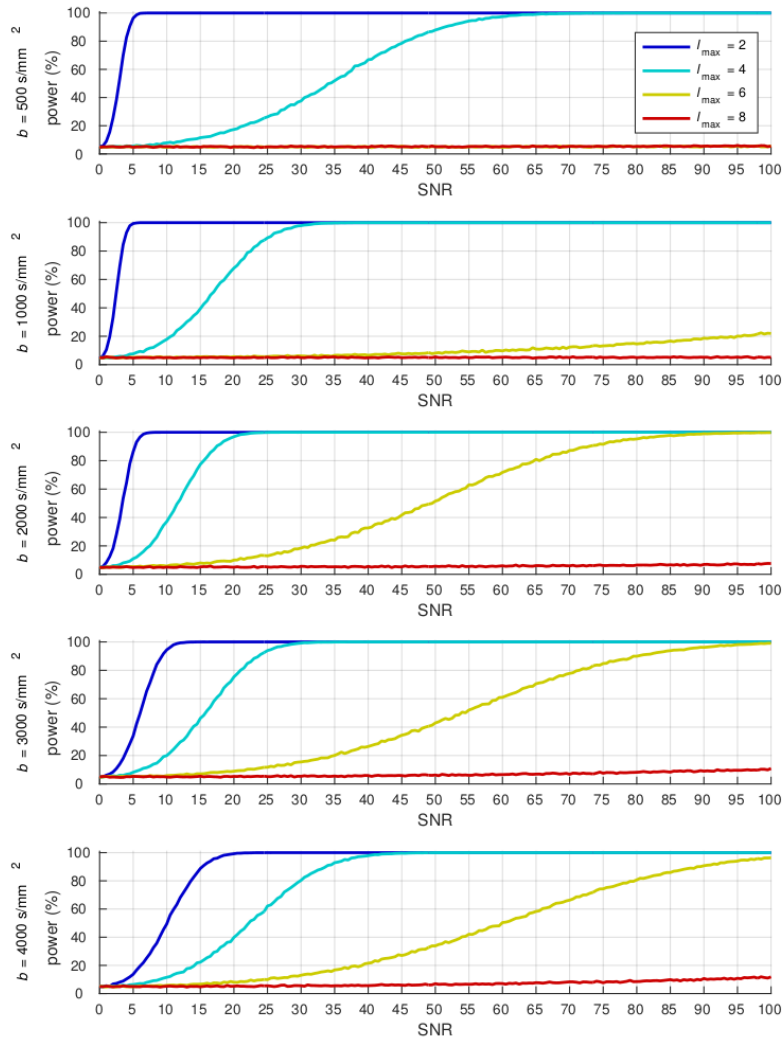


## Supplementary Material



Supplementary Figure 1: The power to detect each axial spherical harmonic (SH) coefficient plotted as a function of the signal-to-noise ratio (SNR) in the  $b=0$  image and assuming a clinically realistic scheme with  $N_{\text{DW}}=100$ , for each  $b$ -value shell independently. Each line corresponds to the power to detect a significant improvement ( $p<0.05$ ) to the fit by including the corresponding  $l_{\max}$  SH terms. This plot was generated using the same procedure as Figure 5 in (Tournier et al., 2013), which corresponds to the adult case.