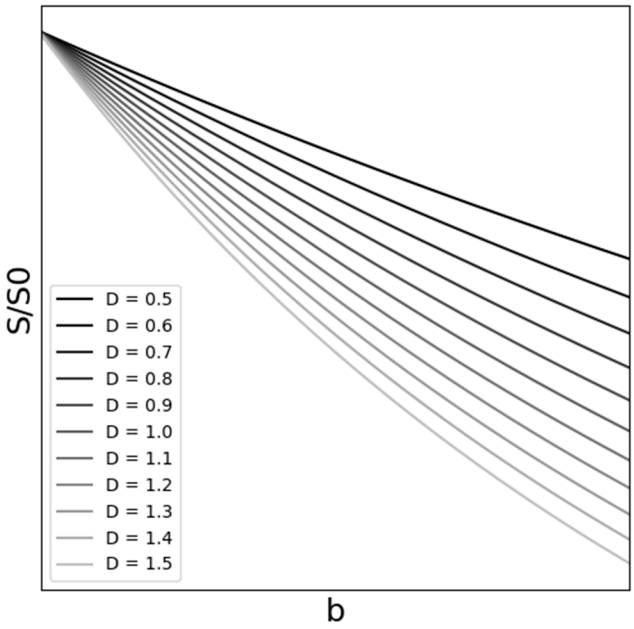

Figure S1: Signal attenuation due to the astrosticks model as a function of b-value for several diffusivities. Increasing diffusivity acts to increase attenuation across the entire b-value range and increase the curvature of the attenuation curve.

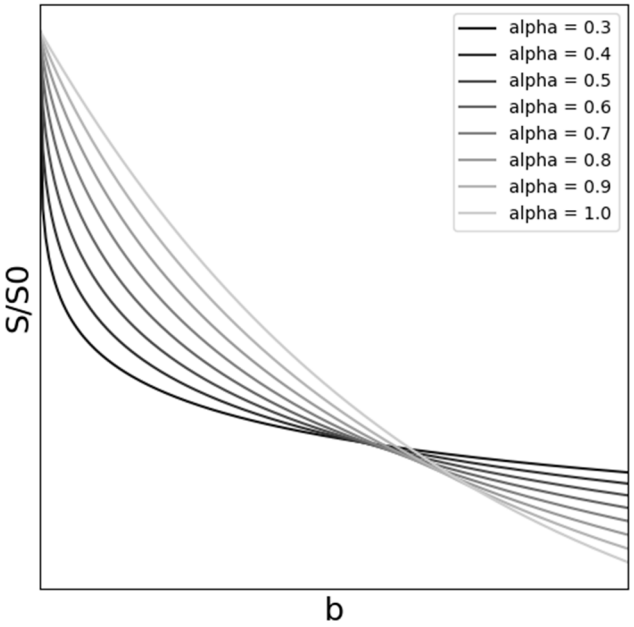

Figure S2: Signal attenuation from the Fractional diffusion model of diffusion MRI signal decay as a function of b-value over a range of exponent values in the quasi-diffusion approximation. Decreasing alpha has the effect of increasing the rate of attenuation at low b but reducing it at high b.

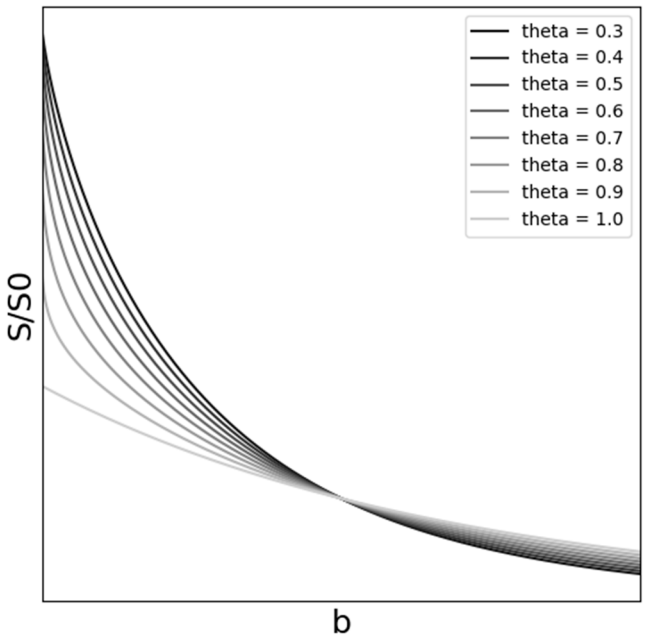

Figure S3: Signal attenuation from the RPBM / time dependent diffusivity model assuming instantaneous monoexponential decay. Similarly to the fractional model, changes in the exponent theta cause the signal to decay more rapidly at low b-value and less rapidly at high b-value, but here the direction of changed is the reverse: decreasing theta rather than increasing alpha.