AbstractID: 8905 Title: Segmentation of White Matter Structures using Fibre Tracking: Towards Establishing a White Matter Atlas of the Brain

The technique of fibre tracking based on diffusion tensor imaging offers the unique possibility of mapping the white matter pathways of the brain in vivo. Rather than attempt to infer brain connectivity using the tracking data we propose the use of the technique to segment the white matter structures of the brain. By performing this operation in a dataset comprising of ten averaged brains in standard space, we seek to establish a new white matter atlas of the brain. White matter structures of the brain are demonstrated using fibre tracking including the cingulum, fornix and anterior commissure whose structures were found to be in close agreement with classical neuroanatomical descriptions. The development of a white matter atlas of the brain may provide a more detailed anatomical description of abnormalities in white matter disease which in turn may allow the identification of new anatomically specific MRI measures that correlate more closely with disability and brain dysfunction.