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The active Sun and its implication for the heliosphere  
oral preferred

## **Magnetic Stereoscopy with STEREO and SDO**

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Stereoscopic 3D reconstruction of coronal loops was carried out for large numbers of coronal loops in active regions, using STEREO-A and B in the early phase of the mission at small spacecraft separation angles. Novel methods of reconstructing the 3D geometry of coronal loops have also been explored by combining stereoscopic triangulation with magnetic field models, such as magnetic potential fields calculated from a number of buried unipolar magnetic charges (Aschwanden and Sandman 2010), buried dipoles (Sandman and Aschwanden 2011), or linear force-free fields (Wiegmann and Neukirch 2002), methods that are also called "magnetic stereoscopy". We present some new results to model the coronal magnetic field with parameterized forward-fitting of potential fields to stereoscopically triangulated loops from STEREO, as well as to automatically traced loops in AIA/SDO images. With these methods, a smaller misalignment angle can be achieved between theoretical and observed magnetic field lines. We demonstrate that such improved coronal magnetic field models can be derived with a combination of AIA and HMI data alone, while STEREO data can be used for validation of the optimized solutions.