

Matthew Wilkinson

SGF, Herstmonceux in-sky safety system testing using ADS-B

Simultaneously with satellite laser ranging at the Space Geodesy Facility, Herstmonceux, a radar dish is driven to point in the same direction as the telescope. A transceiver broadcasts radio wave pulses and listens to detect reflections from aircraft. A detection triggers an immediate inhibition of the laser firing to prevent laser illumination of the aircraft. This is the primary in-sky safety system at the SGF and has operated reliably since the facility began SLR. A SBS-3 ADS-B receiver was installed at the SGF in 2013 to provide a feed of locations broadcast by nearby aircraft. The SGF developed a software package named 'listen2planes', comprised of a server and clients, which is freely available to download. It provides valuable and reliable additional in-sky safety. A new client was developed to receive the server data stream and pick a single aircraft for positions and velocities to be used to drive the radar in azimuth and elevation. This provides a useful way to: -- Monitor regularly that the radar is broadcasting correctly and triggering on aircraft. -- Check that the radar is correctly aligned. -- Investigate the full sky coverage of the radar. The SLR telescope was also set to follow the aircraft for a future feasibility study to detect aircraft using a mounted camera.