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Advanced visual Object Recognition for In-Sky-Laser Safety

Safe SLR operations in a densely packed airspace provides a challenge both to user operated and automated ranging systems. Radar systems, slaved to the laser telescope, certainly provide important safety features. However at larger distances it is very desirable to have an extra level of safety, since the power level of the return signal of the radar system may drop too low for unambiguous aircraft recognition. The desirable extra safety can be achieved by camera systems operating both in the visible and the IR regime. We have designed and built an optical aircraft detection system, which is placed on the SLR transmit telescope. It operates autonomously and provides a laser inhibit when an aircraft is detected. At the same time a user alert is issued to the observer, indicating the laser shut off state of the SLR system.