

Common View Time Transfer by diffuse reflections from Space Debris objects

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Optical two way time transfer between ground stations in common view can be achieved by diffuse reflections from space debris items. These echo signals are detected by both stations individually from time of flight measurements of short laser pulses. Modeling the tumbling motion of the selected space debris target allows for a significant reduction of the return signal scatter. Uncertainties for the transfer of time appear to be reducible to less than 100 ps. This paper outlines the application of the Lomb-Scargle algorithm and illustrates it's application to accurate optical time transfer over larger distances.