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Optical terminal for long-distance laser links to moving targets

Free-space, optical frequency laser links offer high-speed communications between ground and space on the order of terabits per second. However, the atmosphere is a difficult medium for laser propagation. Turbulence causes a beam to deflect and distort as it travels, and also generates large power losses. Additionally, laser links are highly directional and therefore have stringent pointing requirements. Maintaining pointing is particularly important and difficult when one or both terminals is in motion. This work encompasses the design of an optical transceiver terminal to over-come these issues and reap the benefits of free-space laser links, particuarly for ground-to-space applications.

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