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RAY TRACING PROPAGATION OF LASERS IN A CONTINUOUS TURBULENT ATMOSPHERE

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A novel method for simulating the propagation of lasers in turbulent atmosphere is presented. The method incorporates two new approaches; the first is a way to describe the turbulent media as a volumetric bulk, instead of the well-known 2D phase screens. The second is a ray-tracing engine developed for this purpose. The combination of these two approaches allows the reliable modelling of the fine details of the propagation process and the observation of all the relevant parameters. The results are compared to analytic cases and additional data. This method of propagation is probably the most straight-forward modelling scheme available for this purpose. The assumptions and approximations that were used are minimal, thus increasing the validity and scope of this work to include all atmospheric conditions.

Biography

I Naeh has completed his PhD in physics from Tel-Aviv University. During his PhD study he developed new methods for simulatingpropagation of lasers in turbulent atmosphere. Based on these simulations, he has established the concept of atmospheric channels and suggested a newapproach for using these channels to perform coherent beam combining using an optical phased array. Currently, he works at Rafael Advanced Defense Systems Ltd., as a Research Associate. His work was published in leading peer-reviewed journals.

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