Optica Applicata, Vol. XLVIII, No. 2, 2018
DOI: 10.5277/oa180202

Influence of zero and non-zero boresight pointing errors on bit-error rate free-space optic transmission over Málaga atmospheric channel

MARKO SMILIĆ[1*], ZORAN PERIĆ[2], DEJAN MILIĆ[2], ALEKSANDAR MARKOVIĆ[1], MILAN SAVIĆ[1]

[1]Faculty of Natural Sciences and Mathematics, University of Priština,
Lole Ribara 29, 38220 Kosovska Mitrovica, Serbia

[2]Faculty of Electrical Engineering, University of Niš,
Aleksandra Medvedeva 14, 18000 Niš, Serbia

[*]Corresponding author: marko.smilic@pr.ac.rs

In this paper, the influence of a zero and a non-zero boresight pointing errors on the performances of free-space optic transmission over the Málaga atmospheric turbulence channel is considered. Closed form expressions for a zero boresight channel model probability density function, non-zero boresight channel model probability density function, as well as a bit-error rate over a binary phase shift keying modulation transmission are provided. Numerical results for zero and non-zero boresight pointing errors are graphically presented.

Keywords: free-space optic (FSO) system, Málaga atmospheric turbulence channel, zero boresight pointing error, non-zero boresight pointing error, average bit-error-rate (ABER).