

## ABSTRACT:

In a weakly marine turbulent medium, formulation of the on-axis scintillation index of a flat topped Gaussian beam is derived by using the Rytov method and the intensity has log-normal distribution expressed. The scintillation index and average bit error rate  $\langle \text{BER} \rangle$  with respect to changes in propagation distance, wavelength, beam size, and average signal to noise ratio  $\langle \text{SNR} \rangle$  are exhibited. Our results indicated that small  $\langle \text{BER} \rangle$  advantage can be achieved in weak atmospheric marine when focal length equals to propagation distance and when the order of flatness is small value.