



## **Lidar studies of turbulence In the Mediterranean troposphere**

A. Zilberman(1), **E. Golbraikh**(2), N.S. Kopeika(1)

(1) Ben-Gurion University of the Negev, E&CE Dept, POB 653, Be'er-Sheva, Israel, (2)  
Ben-Gurion University of the Negev, Center for MHD Studies, POBox 653, Be'er-Sheva,  
Israel

(golbref@bgu.ac.il)

In the present report we are discussing experimental results of the LIDAR studies of the turbulence and aerosol behavior in the troposphere (above 2 km) in the Mediterranean region. Most models of optical radiation propagation through turbulent media are based on the assumption that turbulence is of Komogorov's type. It is also assumed that this type of turbulence corresponds to fluctuations of passive scalar field (temperature, aerosol, etc.). From the spectrum of the intensity fluctuation of LIDAR signals scattered by aerosol concentration inhomogeneities, the behavior of atmospheric turbulence spectrum (power law exponent  $\gamma$ ) is estimated. As follows from the experimental data, in the troposphere (above the surface layer) the turbulent field of passive scalar fluctuations can differ from Kolmogorov's model. On the other hand, as follows from the experimental data, the deviations of the power law exponent profile of the turbulent spectra has a strong correlation with a profile of the aerosol concentration in the troposphere.