

## ABSTRACT

The dissertation presents the classification of Bragg gratings, methods of their manufacture, the theory of conjugate modes and the method of transmission matrices used in the development of mathematical models of homogeneous and inhomogeneous gratings. A mathematical model of chirped gratings was developed, with the help of which they were modeled.

The paper presents a laboratory setup for measuring spectral characteristics with the ability to change the temperature affecting the gratings. On the basis of the performed experiments, the spectral characteristics were recorded for gratings with a chirp 0; 0.1; 1; 5; 10 for the temperature range  $-30\div 140^{\circ}\text{C}$  and  $140\div -30^{\circ}\text{C}$ . Using the measurement results, the temperature sensitivity of the chirped Bragg gratings was determined.

**Keywords:** Bragg gratings, optical fiber, spectral characteristics of the BBG, refractive index, linear chirp, transmission matrix method.