

The work deals with the dynamics of spin-polarized charge carriers and their influence on the magnetization in ferromagnetic semiconductor (Ga,Mn)As. The experimental methods used for the measurement are time-resolved differential reflectivity and time-resolved Kerr rotation techniques of ultrafast laser spectroscopy. The influence of impurities on the carrier dynamics and the role of magnetic ions on spin relaxation of photogenerated electrons in (Ga,Mn)As was investigated using differential reflectivity technique. In the Kerr rotation signal the component independent on the spin polarization of the photoexcited carriers but dependent on their concentration was identified. This spin-insensitive component is present only in the ferromagnetic state of the semiconductor ( below  $T_C$  ) and shows an oscillating behavior which was attributed to the precession of the magnetization induced by the change in the material anisotropy. The influence of different experimental conditions (wavelength, intensity...) on this component of Kerr rotation signal was also investigated.