

In the thesis we focus on the methods used to detect photons in Ring Imaging Cherenkov detectors, their description and the basics of the physical phenomena which lie behind them. We provide a brief description of the gaseous detector types and we describe the development of the new Thick GEM based detection system for the RICH-1 of the COMPASS experiment. We provide a detailed description of the latest tests and the convoluted route of the research done in the field. We review the ThGEM-based detector performance in comparison to the other methods of detection.