Abstract: Quasar microlensing is a relatively newly explored phenomenon, which is ideally suited for studying the spatial distribution of emission from the innermost accretion disc. By now we know many macrolensed quasars, in which we can observe multiple images formed by the deflection of light in the gravitational field of an intervening galaxy. In case one of these images passes directly through the stellar population of the galaxy, it can be additionally microlensed by individual stars. The gravitational field of these stars forms a caustic network for light passing by. When a quasar accretion disc crosses behind this network, induced changes can be observed in the light curve as well as in the spectrum. In the first part of this thesis we study the statistics of the time intervals between successive caustic crossings. In the second part we use a fully relativistic Kerr-metric thin-disc model for studying the light curve of a fold-caustic crossing and its dependence on the accretion-disc parameters. In the last part we simulate changes in the X-ray iron-line profile during a fold-caustic crossing. We find characteristic spectral features formed on the line, and derive their analytical description. Finally, we map the maximum strength of microlensing-generated peaks on the spectral line for different accretion-disc parameters.