

1145-83-1103 **Marcus C. Werner*** (werner@yukawa.kyoto-u.ac.jp), Kitashirakawa Oiwakecho, Sakyo-ku,
Kyoto, 606-8502, Japan. *New developments in optical geometry.*

In general relativity, optical geometry is defined as 3-manifold whose geodesics correspond to spatial light rays, thus providing a geometrical description for the gravitational lensing effect. In this talk, I will discuss the background and introduce recent developments in this field, some of which grew out of the AMS MRC ‘The Mathematics of Gravity and Light’. This includes a theorem on the isoperimetric problem in the Riemannian optical geometry of static spacetimes (with Henri Roesch), and the application of the so-called Gauss-Bonnet method to the Randers-Finsler optical geometry of stationary spacetimes (with Nishanth Gudapati). I will also describe recent work on the geometrical phase in optical geometry (with Sosuke Noda) and the gravitational analogue of the magneto-electric effect (with Gary Gibbons). (Received September 20, 2018)