Gravitational birefringence of light

Pierre Saturnini
Laboratoire de Physique de Clermont-Ferrand
France

The most general principles of relativity allow us to define the variables used to describe the motion of massive and charged spinning particles in a gravitational field. They also yield the so-called "universal" classical equations these variables obey. However, these equations are not deterministic and additional conditions are needed to define a particle model by fixing the mass, scalar spin, charge... These models do not follow the geodesic principle. Our purpose is to present deterministic equations describing the motion of purely classical massless spinning particles in a gravitational field.