Eventually, in 1921, the mathematician (and relativist skeptic) Émile Picard asked Paul Langevin to demonstrate the effect in the framework of the relativity, perhaps guessing it was impossible [39]. Again any such expectations and within a couple of months, Langevin derived the effect from the General relativity [36]. Let us specify however that the Sagnac effect was already derived from special relativity by Von Laue one year before Langevin [40]. Many derivations were in fact proposed all along the 20th century, issued from both special relativity and general relativity [41,42], even though the Sagnac effect is usually deemed to be a special relativistic effect [43].

The reasoning, both simple and elegant, of Langevin can be shown in a few lines. This illustrious physicist begins by noting that this is an experiment of the first order in $\frac{v}{c}$ (more precisely in $\frac{R\omega}{c}$, if $R$ denotes the radius of the disk and $\omega$ the angular velocity, assumed to be constant), contrarily to the experiment of Michelson–Morley, which involves a second-order effect. We start from the Minkowskian metric associated with the central observer, denoted by $O$, located at the center of the rotating disk. In his article, Langevin used the cartesian coordinates, we modernize the presentation a little by choosing