

Comment on E. Gehrcke's Note "Über den Äther"⁽¹⁾

by A. Einstein

(originally submitted 29 November 1918)

(1918)

in *Verhandlungen der Deutschen Physikalischen Gesellschaft*, **20**, 261.

Translation: © R.R.Traill (2002, 2005): info@copyright.com.au — offered here with the permission of the copyright holders of the original German text: © Albert Einstein Archives: (website www.albert-einstein.org — contact chayab@savion.huji.ac.il) who also drew attention to the translations within Einstein's collected works and kindly suggested minor improvements to this text.

In the above-mentioned note, it is claimed that aberration can be explained by the theory of a light-bearing aether which moves with matter. This claim depends upon a theory proposed by Stokes, which is referred to briefly in the third edition of Drude's *Optik*. Thanks to the importance of the subject and due to Stokes' authority, I deem it necessary to stress that that theory is unsustainable because it rests on other contradictory presuppositions. Namely, if the aether is to be carried along by bodies in space, then its velocity vector cannot at all be free of rotation (and stable), as the Stokes derivation of the aberration-laws proposes. This follows from well-known propositions of potential-theory.

In truth, the hypothesis of an aether which moves with space-bodies is incompatible with the aberration-law.

Consolidated References in Chronological Order

Einstein's own details are in dark blue.

The translator's additions are coloured violet.

Stokes, G.G. (1845 Jul) "On the aberration of light" *Philosophical Magazine* (3), **27**, 9-; or from his *Mathematical and Physical Papers*, **1**, 135-140. (1966) — [not explicitly cited here]

Stokes, G.G. (1846 Feb) "On Fresnel's theory of the aberration of light" *Philosophical Magazine* (3), **28**, 76-; — or from his *Mathematical and Physical Papers*, **1**, 141-147. (1966) — [not explicitly cited here].

Drude, Paul (3rd German edition, 1912). *Optik*. [Cited informally here. Also cited by Gehrcke (1918; and 1919 with a quote). The 1959 English edition (Dover: NY) seems to lack the passage in question. The previous German editions were 1900 and 1902.]

⁽¹⁾Gehrcke, E. (1918 Oct). "Über den Äther" *Deutsche Physikalische Gesellschaft. Verhandlungen*, **20**, 165-169. — English translation "Concerning the Aether" at: <http://www.wbabin.net/physics/trail5.htm>

Einstein, A. (1918 Nov) — **This Paper** [replying to Gehrcke; same journal] —

Gehrcke, E. (1919 Feb) "Zur Diskussion über den Äther" *Deutsche Physikalische Gesellschaft. Verhandlungen*. **21**(3/4), 67-68. [Reply to Einstein].