

Paul Langevin

Advanced

- Paul Langevin (1872 – 1946) was one of the fathers of magnetism.
- In the "miracle year" 1905, when Einstein published three revolutionary papers, Langevin published his theory of para- and diamagnetism.
- Considering that quantum theory had yet to be discovered, and that statistical thermodynamics was in its infancy, his contribution was of amazing insight.
- As far as paramagnetism was concerned, he first established the treatment we used in the text for orientatio polarization (which is formally identical to paramagnetism).
- The resulting function of the form $L(a) = -1/a + \coth(a)$ is therefore called the Langevin function (or sometime Langevin-Debye function, since Debye used the same procedure somewhat later for polar molecules).
- Langevin also worked in the field of Brownian motion (like Einstein). His work concerning ultrasonic sound during world war I was the base for sonar technology .