

Danger! Systematic error!

Robert Matthews has provided a useful capsule summary of the role of statistics and systematic error in the OPERA experiment's debunked claim of superluminal neutrino transit ("Bad stats: The OPERA experiment versus Einstein", July 2024, pages 42–43). The role of systematic error in experimental physics has previously been noted in the pages of *Significance*.¹ Indeed, earlier examples of results in physics and astronomy that appeared to demonstrate unambiguous "statistical significance", but then "crumbled to dust" with the discovery of systematic error, were catalogued by Seife.²

Seife attributes the saying that Matthews quotes, "Half of all three-sigma results are wrong", to the late John Bahcall, who added, "It's the systematic errors that kill you."

Christopher Tong, Sparks, NV, USA

Reference

1. Bailey, D. (2018) Why outliers are good for science. *Significance*, 15(1), 14–19.
[Crossref](#) [Find in my library](#)
2. Seife, C. (2000) CERN's gamble shows perils, rewards of playing the odds. *Science*, 289, 2260–2262.
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