

The 1919 Eclipse Expedition Results in the Context of the 2019 Age of LIGO

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Abstract

The centennial of the eclipse observations of 1919 from Principe by Eddington and colleague and from Sobral (Brazil) by Crommelin and colleague will be discussed by experts Daniel Kenefick (US) and Jeffrey Crelinsten (Canada), who have written written books on the subject. Joana Latis and Rosa Doran (Portugal) will discuss the centennial observations on Principe.

1. Introduction

Daniel Kenefick (1) has written *No Shadow of a Doubt: The 1919 Eclipse That Confirmed Einstein's Theory of Relativity* (Princeton University Press 2019). Earlier, Jeffrey Crelinsten (2) had written *Einstein's Jury: The Race to Test Relativity* (Princeton University Press, 2006 hardback; 2016 paperback: with p. 12 correction, Slipher's spectrum of the Andromeda Galaxy showed blueshifted spectral lines). Both authors discuss not only the observations and expeditions but also the doubts that had been raised about the validity of the results and finally endorse their validity.

2. Tests of Relativity

Traditional tests of the General Theory of Relativity, with some updates beyond the eclipse deflection observations, were summarized by Pasachoff [3, 4]. Comments on the gravitational-redshift effect, ruling out a non-GR solution, were discussed by Pasachoff and Silk [5]. Sigismondi, Bordoni, and Pasachoff [poster, this session] discuss the possible use of the 11 November 2019 transit of Mercury to test the traditional GR effect on the advance of Mercury's perihelion.

3. Education on Principe

Portuguese astronomers Joana Latis and Rosa Doran arranged events on Principe (now part of Principe and São Tomé) around the 29 May 1919 eclipse's centennial, and are involved in setting up lasting educational benefits for the island's inhabitants.

References

- [1] Kenefick, D., *No Shadow of a Doubt: The 1919 Eclipse That Confirmed Einstein's Theory of Relativity* (Princeton University Press 2019: ISBN 978-0-691183862; ebook: 978-0-691190051).
- [2] Crelinsten, J., *Einstein's Jury: The Race to Test Relativity* (Princeton University Press, 2006 hardback; 2016 paperback: ISBN 978-0-691171074; ebook: ISBN 978-1-400849673)
- [3] Pasachoff, J. M., 2009, "Solar Eclipses as an Astrophysical Laboratory," *Nature*, June 11, **459**, 789-795.
- [4] Pasachoff, J. M., 2017, "Heliophysics at Total Solar Eclipses," *Nature Astronomy* **1**, article number 0190 (August).
- [5] Pasachoff, J. M., and J. Silk, 1968, "The Interpretation of the Absorption-Line Red-Shifts in the Solar Spectrum," *Solar Physics* **4**, 474-475.