

Abstract Submitted
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Pioneer Anomaly: Artifact or Real Astrophysical Phenomenon of the Solar System. JACQUES LEIBOVITZ — A crucial experiment is suggested to determine conclusively whether the Pioneer anomaly (PA) is an artifact or a real astrophysical phenomenon of the Solar System (APSS). NASA may already have in its archives the data needed. An experimental proof that the PA is an artifact would end speculations on possible new physics to explain the PA. If the experiment proves that the PA is an APSS, then a second crucial experiment is suggested to determine conclusively whether the (then proven) APSS is, or is not, produced by dark matter (DM). NASA may already have in its archives the data needed. If the answer is: “Not DM,” then physicists would search for a suitable new physics to explain the PA. However, if the answer is DM, then it would be necessary to reconcile the amount of DM, needed in the Solar System to explain the PA, with the ranging results used by NASA to fix the locations of the planets. That might require a new physics, but in a different direction. Either way would improve our understanding of our Solar System.

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