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BICEP2 and the hunt for the axion

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The BICEP2 experiment has recently reported observation of primordial tensor perturbations which are consistent with predictions from inflation models with a high inflation scale. If true, this rules out many proposed particle physics models with scalar fields whose values in the early universe affect physics today, as induced fluctuations in such a field would lead to unacceptably high isocurvature fluctuations today, conflicting with observations of the Cosmic Microwave Background (CMB). In particular, axions produced above the inflation scale are ruled out, which closes a loophole by which these conjectured particles could escape detection. I give a survey of what we learn about axions, a fascinating story that brings together hadronic physics, inflationary cosmology, the hunt for dark matter, and the anthropic principle.