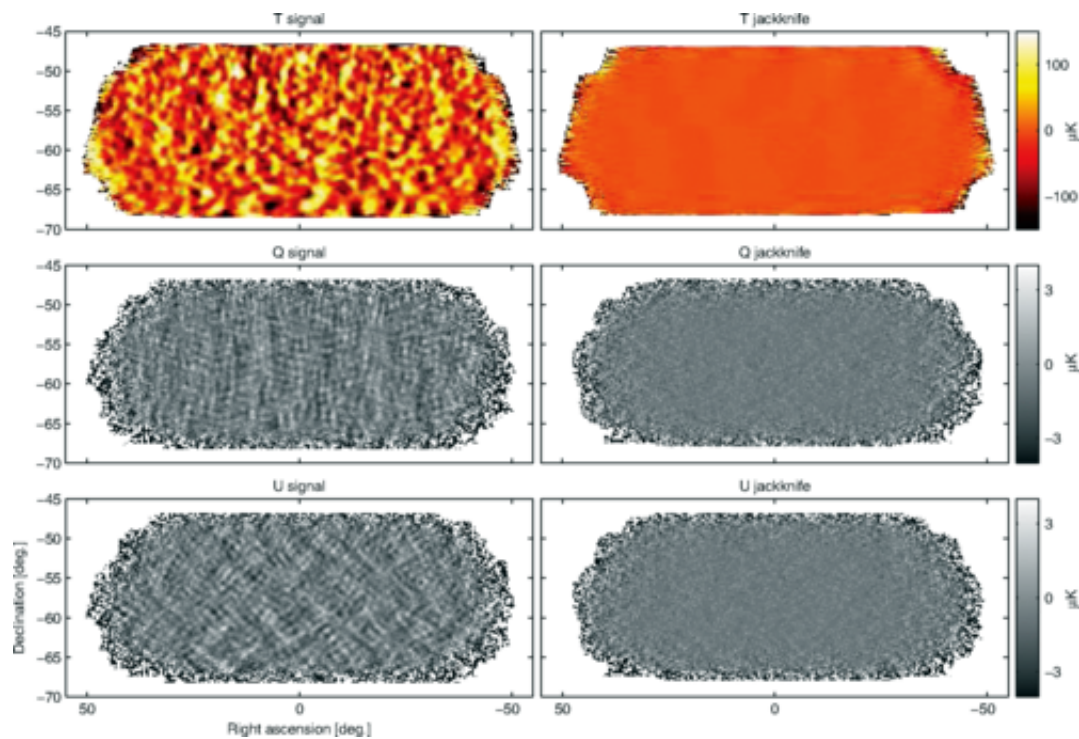


# BICEP2 researchers publish nuanced account of stunning patterns in the microwave sky

June 19 2014



BICEP2 T, Q, U maps. The left column shows the basic signal maps with  $0.25^\circ$  pixelization as output by the reduction pipeline. The right column shows difference (jackknife) maps made with the first and second halves of the data set. No additional filtering other than that imposed by the instrument beam (FWHM  $0.5^\circ$ ) has been done. Note that the structure seen in the Q and U signal maps is as expected for an E-mode dominated sky. Credit: American Physical Society

Following a thorough peer-review process, the researchers who previously announced the detection of B-mode polarization in a patch of the microwave sky have published their findings today in the journal *Physical Review Letters*.

The researchers provide some evidence that the signals they have found may be the result of [gravitational waves](#) from the earliest moments of the universe's existence and thus might constitute the first observation of phenomena from the rapid expansion of the universe known as the inflationary period.

The results from the BICEP2 experiment, the second generation of the Background Imaging of Cosmic Extragalactic Polarization experiment, are controversial in the astrophysics community, with various experts proposing that the signal may be an artifact resulting from distortions created by Galactic dust.

The BICEP2 collaboration addresses these claims directly, changing, removing and adding some analyses, but they acknowledge that they cannot rule out the possibility that dust may be partly or entirely responsible for the gravitational-wave-like signals. They anticipate that forthcoming data will resolve this question about their potentially groundbreaking research.

**More information:** Paper: Detection of  $B$ -Mode Polarization at Degree Angular Scales by BICEP2, [journals.aps.org/prl/abstract/ ...  
ysRevLett.112.241101](http://journals.aps.org/prl/abstract/physRevLett.112.241101)

Provided by American Physical Society

Citation: BICEP2 researchers publish nuanced account of stunning patterns in the microwave sky

(2014, June 19) retrieved 20 March 2024 from <https://phys.org/news/2014-06-bicep2-publish-nuanced-account-stunning.html>

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