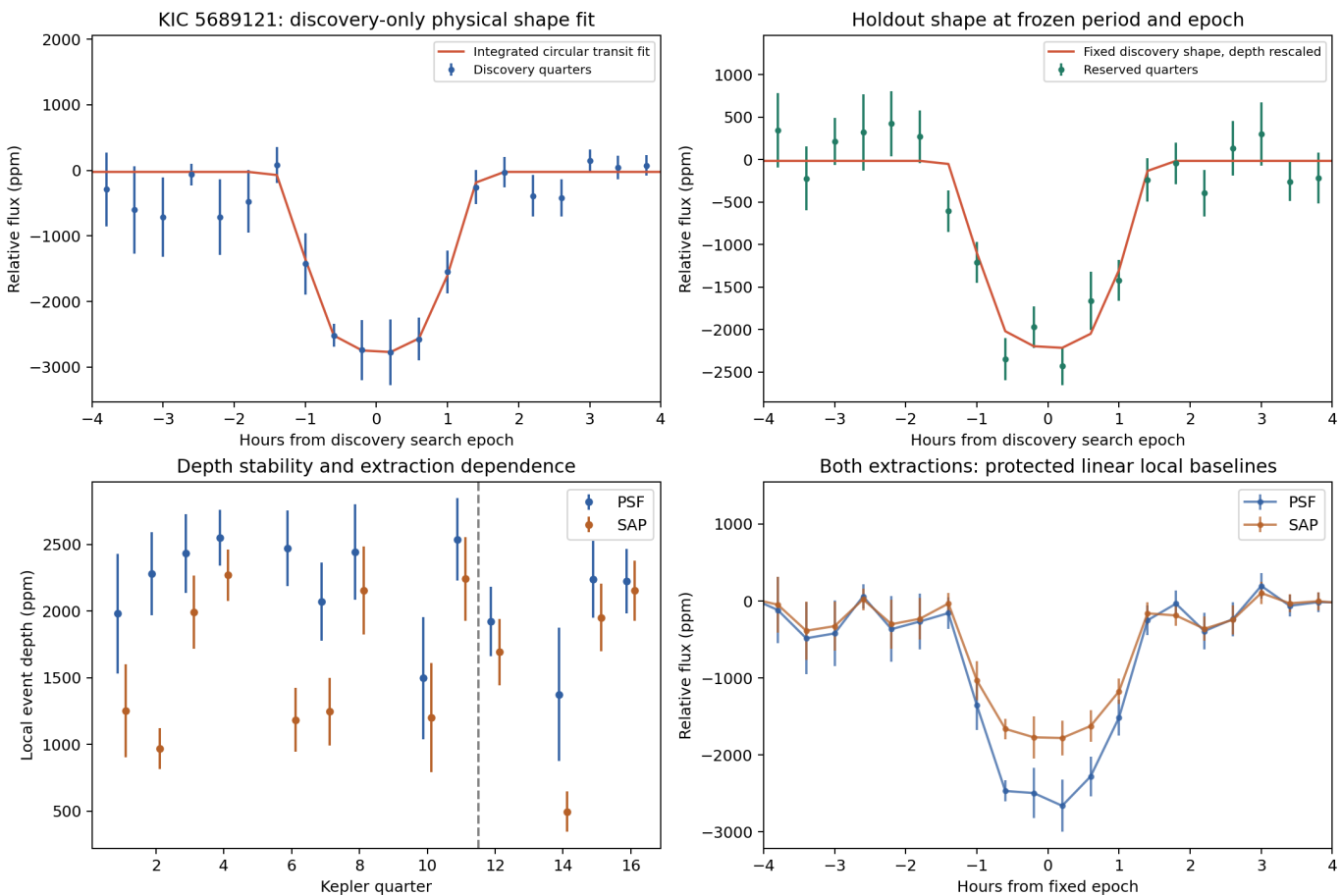


A credible transit candidate

KIC 5689121 / TIC 120686465 / Gaia DR3 2103792461826460288

Potentially unreported. The evidence supports a planet candidate, not a confirmed or statistically validated planet. Nothing has been submitted, named, or published.

Period	13.7694 days (search ephemeris; uncertainty not estimated)
Transit duration	About 2.1-2.4 hours
Conditional size	About 3 Earth radii, if on-target and undiluted
Repeated events	70 usable local events; 22 in reserved quarters

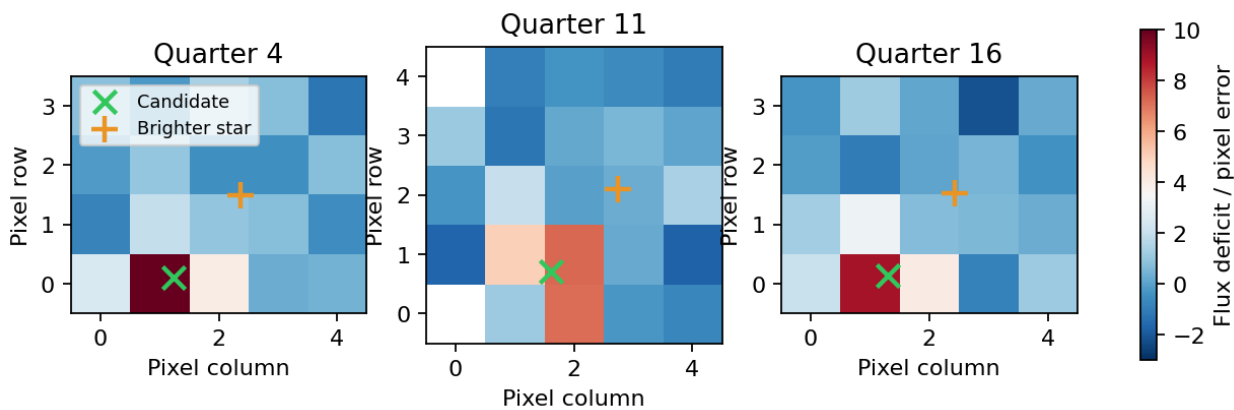


The discovery-only shape predicts the timing and shape in four reserved quarters. Both PSF and aperture photometry show the dip. These are two extractions of the same observations, not two independent telescopes.

Raw PSF local fit: 2165 +/- 98 ppm overall; 1929 +/- 159 ppm in reserved data. Corrected aperture uncertainties give local SNR 13.73 overall and 5.84 held out. These conditional scores are not global discovery probabilities.

The signal follows the target star

Original Kepler pixel data favor the candidate over the brighter star 7.1 arcseconds away in all 13 observed quarters. Official Kepler PRF templates fit the difference images at the frozen 13.7694-day ephemeris.



Green marker: candidate. Orange marker: brighter aperture primary. The difference-image fits remain consistent with the candidate when the common positional correction is removed and a spatial background gradient is added. The primary star independently has no dip at this ephemeris.

Identity	KIC 5689121 = TIC 120686465 = Gaia ID above
Catalog star	Radius ~0.54-0.56 solar; Gaia RUWE 0.984; NSS flag 0
Kepler catalogs	No same-host KOI, TCE, confirmed planet, or EB match
TESS catalogs	No matching signal in the retrieved TOI/CTOI/RAVEN checks
Literature	Prior possible MELANGE-3 member; no transit report found
Nearby coincidences	Kepler-169 e: similar period, but 2.80 days out of phase

Novelty is provisional: catalog and indexed-search absence cannot establish that nobody has reported the signal. Exact aliases, nearby sources, published background-star candidates, and the association paper were checked. Full query results and source URLs are preserved in the research bundle.

What remains unresolved

An unresolved eclipsing companion or more distant blended source is not ruled out by these tests. PRF systematics and correlated noise are not fully calibrated. No formal false-positive probability, high-resolution imaging, reconnaissance spectroscopy, or new ground-based transit observation was obtained.

Scientific next step: independent astronomer review, proper-motion-aware multi-source localization, formal blend validation, and targeted follow-up. A candidate designation or a planet name has not been assigned.

A more promising search pool

Kepler Bonus supplied this lead. Its long light curves include hundreds of thousands of background sources outside the original Kepler target list. Our catalog cuts left 1,800 background M dwarfs; the 64 brightest eligible stars were actually searched in this pilot.

Kepler Bonus	Implemented: 64-star pilot, 0.5-25 day periods
TESS SPOC / QLP	Implemented: 175 stars, two period bands
EVEREST / K2SFF	Identified: complementary K2 observations; not scanned
TGLC	Identified: Gaia-informed TESS extraction; not scanned
CDIPS / PATHOS	Identified: young/cluster stars; not scanned

Archive ranking is a scientific judgment, not a quantified probability of discovery. Cluster stars often have stronger variability; alternate TESS extractions reuse the same photons. More data are useful only when quality, contamination and prior searches are accounted for.

Validation of the workflow

Known controls recovered LHS 3844 b and Kepler-138 c/d, explicitly excluded from discovery claims. Synthetic tests checked transit recovery and holdout separation. The initial TESS screen yielded nine signals and five false-screen passes in 100 inverted runs, so screen scores alone were never treated as planets. The archive review found QLP timing errors in sectors 99-104 affecting 44 selected stars. All 88 affected two-band runs were repeated with those QLP products removed. Original results are retained as superseded evidence. Revised holdouts are retrospective; earlier conclusions were corrected. The Kepler pilot reserved the last 25% of usable quarters, rounded up, before searching. Its second initial survivor has secondary dimming and weak aperture support. None of 64 inverted controls passed the first screen. These counts do not provide a formal false-alarm probability.

Reproduction and provenance

The code/results archive includes pinned upstream commits, bootstrap.sh, package versions, catalog snapshots, per-file hashes, complete measurements, rejected hypotheses and the independent audit. The two data archives include normalized light curves and the candidate pixel/calibration data. Read README.md before rerunning.

Primary references and data services

Kepler Bonus: Martinez-Palomera et al. (2023)
<https://arxiv.org/abs/2310.17733>

Kepler Bonus data (CC BY 4.0)
<https://archive.stsci.edu/hlsp/kbonus-bkg>

QLP documentation and timing warnings
<https://archive.stsci.edu/hlsp/qlp>

NASA Exoplanet Archive
<https://exoplanetarchive.ipac.caltech.edu/>

Gaia archive
<https://gea.esac.esa.int/archive/>