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HIP 102014

HIP 102014

A light for our story



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A story among the stars

Celestial Library edition



*Every light holds a story. These pages
follow its journey, from the heart of the
star to the sky we share.*

The sky, page by page

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HIP 102014

One light among many

Across the dark southern sky, Microscopium offers few bright landmarks. One amber point there is HIP 102014, a red giant whose light keeps a quiet rhythm. When TESS turned its cameras toward the region, that rhythm became part of an early test of how a spacecraft could listen to stars across a wide sky.

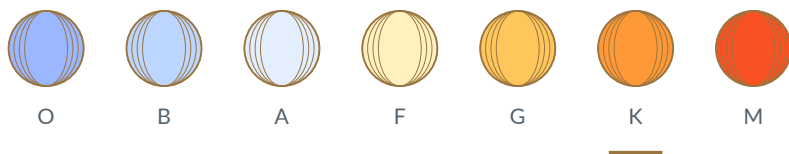
A star's surface does not need to be resolved for its inner life to leave a trace. Small changes in brightness carry the pattern of sound-like oscillations. Read patiently, they can reveal a giant's scale and history, while each estimate keeps the uncertainty that belongs to the method.

The colour of its fire

The light of HIP 102014 has a character of its own. The K family keeps the colour of an ember seen at the end of an evening. Its surfaces are cooler than the Sun's, though still extraordinarily hot. That amber tint suggests a gathered light, a warmth that seems to ask us to stay a little longer.

To the unaided eye, a stellar colour can be little more than a whisper. The atmosphere makes it tremble and our eyes receive it in their own way. Beyond that point we can imagine a living surface of hot matter: the visible beauty of processes working on a scale far greater than ours.

SEVEN FAMILIES OF LIGHT

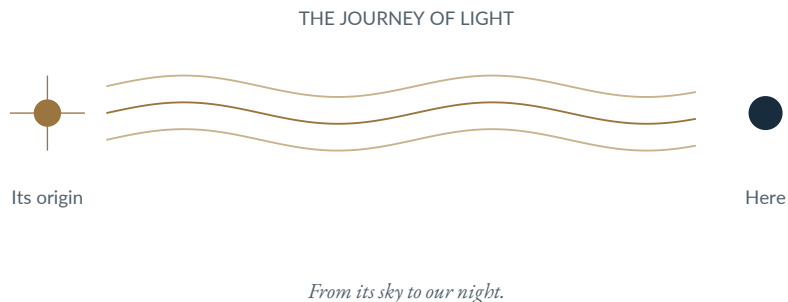


Light keeps the colours of its origin.

The journey ending here

The light of HIP 102014 crosses approximately 239.1 light-years to reach us. The brightness we receive has therefore spent about 239.1 years on its way. Distance becomes time: looking at this star means meeting light that began travelling before this moment. When it set out, the Sun and its planets already shared a history billions of years old. On their scale, this journey is barely a breath.

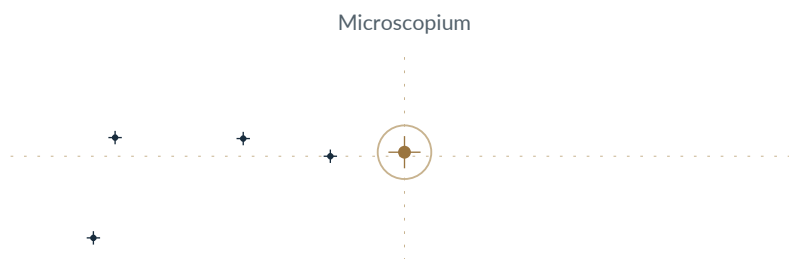
Its light has crossed the time of several generations. We can imagine hands writing letters, lit windows and voices that now live only in other voices. Through all that passing on, the brightness kept travelling; tonight it reaches us.



A landscape for imagination

HIP 102014 lies in the region of the Microscope. The Microscope reminds us that the immense and the tiny share our curiosity. Sometimes a very small act of attention opens a depth we had not suspected.

Figures in the sky are a human way of approaching immensity. In our gaze they join lights that may lie at very different distances. Imagination stretches the thread; the stars provide the brightness. A single landscape can therefore keep old images while receiving a story that begins tonight.



Its light, among other lights of the constellation.

The giant that rang in a new sky

When TESS began surveying the southern sky, a team chose twenty-five bright red giants to test how well the new spacecraft could hear stellar oscillations. HIP 102014—also HD 196737—was among them. Its light curve carried a clear seismic pattern: a broad peak near 46.6 microhertz and a regular spacing of about 5.25 microhertz between modes. Thirteen groups examined the spectra, and the study combined their measurements rather than trusting a single reading. From those rhythms and stellar models came an estimated mass of 1.40 Suns, a radius just over ten Suns and an age near 3.4 billion years. The table keeps statistical and systematic uncertainty separate, a reminder that even a well-heard star retains margins around its story.

Its oscillations turn hidden structure into rhythm, while the uncertainty leaves room for the patient work of refinement.

There is tenderness in the patience of that listening. A distant light becomes a rhythm, and a rhythm becomes something we can return to. Beneath the star, we may think of the days that resemble one another without ever repeating: each carries its own small variation, yet together they make the long, recognisable music of a shared life.

A life opening out

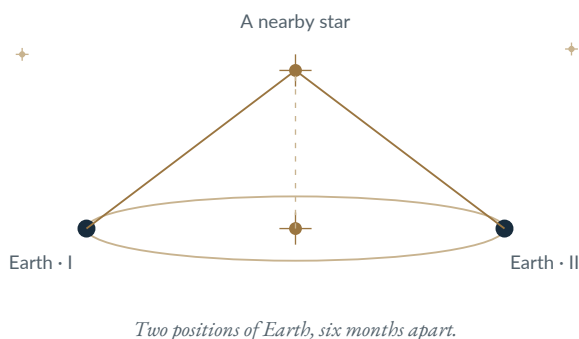
The word giant speaks of a star that has moved beyond the appearance of its first long stage. Its envelope has expanded and the interior has changed the way it supports itself. We can imagine a life opening its rooms, a light taking up more space while writing a different chapter of its story.

To approach HIP 102014, we can let that scale widen our imagination. A stellar age is unlike a birthday: it speaks of changing matter, of energy finding a way out, of a balance sustained and transformed. Tonight's light is one page of that time, and we happen to be here to receive it.

Measuring with two glances

To begin measuring a stellar distance, Earth offers us a movement. We observe from one side of its orbit and look again about six months later from the other. A nearby star seems to shift slightly against more distant ones. That small change of perspective is called parallax.

We can feel the principle by looking at a finger with one eye and then the other. What fits between two glances at home requires our planet's journey in the sky. There is something beautiful in that patience: to learn how far a light is from us, we first learned to look from somewhere else.



Nothing stands still

Although it seems still, HIP 102014 belongs to a moving sky. Stars travel through the galaxy and our own home moves with the Sun. The distances are so great that many of these changes need years of observation to become visible. The serenity we see is really keeping a journey.

We can imagine every night as a meeting between travellers. We arrive with one more day of memories; the star arrives with its light and its path. The meeting seems to repeat, yet it is never quite the same. Perhaps that is why looking again can be such a simple way to celebrate shared time.

The night of finding it

HIP 102014, also HD 196737 and HR 7893, lies in Microscopium. At visual magnitude 5.47 it is close to the limit of unaided sight under dark skies, so binoculars help. Use a current chart to find the sparse constellation around J2000 coordinates RA 20h 40m 19.8s, Dec $-33^{\circ} 25' 55''$. Its low southern position means visibility and altitude depend on your latitude, season and horizon.

If a telescope joins the evening, a wide field is a gentle beginning. As a reference, a 114 mm Newtonian with a 500 mm focal length gives 20× with a 25 mm eyepiece. The star remains a point of light; the instrument gathers more of its brightness. The best memory may be the moment we leave the eyepiece and say: there it is.

Somewhere to return

We can leave this amber giant in Microscopium with its measured rhythms in mind. TESS gathered the light; careful comparisons among teams turned a faint oscillation pattern into estimates of mass, radius and age. The star remained a distant point, yet its changing brightness let astronomers read deeper than its surface.

The age in the table carries both statistical and systematic uncertainty. That margin is part of the story: a signal can be clear while the models that translate it into a lifetime continue to be refined. HIP 102014 keeps its song, and the invitation to listen again.

The traces of this story

ESA Hipparcos / VizieR

https://vizier.cds.unistra.fr/viz-bin/VizieR-5?-source=I/239/hip_main&HIP=102014

NASA · Our Sun

<https://science.nasa.gov/sun/facts/>

ESA · Measuring stellar distances by parallax

https://www.esa.int/ESA_Multimedia/Images/2013/06/Measuring_stellar_distances_by_parallax

Silva Aguirre et al. (2020) · ApJL 889 L34 · TESS red-giant sample; §§II–IV and Table 1; TIC 441387330 / HIP 102014.

<https://arxiv.org/pdf/1912.07604>

ESA Hipparcos catalogue via CDS VizieR · HIP 102014 row; coordinates, parallax and magnitude.

https://vizier.cds.unistra.fr/viz-bin/asu-tsv?-source=I/239/hip_main&HIP=102014

To keep discovering

NASA · The lives of stars

<https://science.nasa.gov/universe/stars/>

NASA · What is a light-year?

<https://science.nasa.gov/exoplanets/what-is-a-light-year/>

IAU · Constellations and their names

<https://iauarchive.eso.org/public/themes/constellations/>

Celestron · Choosing eyepieces

<https://www.celestron.com/blogs/knowledgebase/how-to-determine-which-eyepieces-to-use-with-your-telescope>

SIMBAD / CDS · HIP 102014 = HD 196737 = HR 7893 = TIC
441387330; identifiers, K1 III type and astrometry.

<https://simbad.cds.unistra.fr/simbad/sim-id?Ident=HD%20196737>

Original ISDORA prose and illustrations. Images are artistic evocations or diagrams, not to scale. Distances are approximate. Constellation figures include contemporary literary readings.



May there always be a night
to look again.



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A STORY OF LIGHT