

THE EVRYSCOPE:

Science from the First Full-Sky, Gigapixel-Scale Telescope

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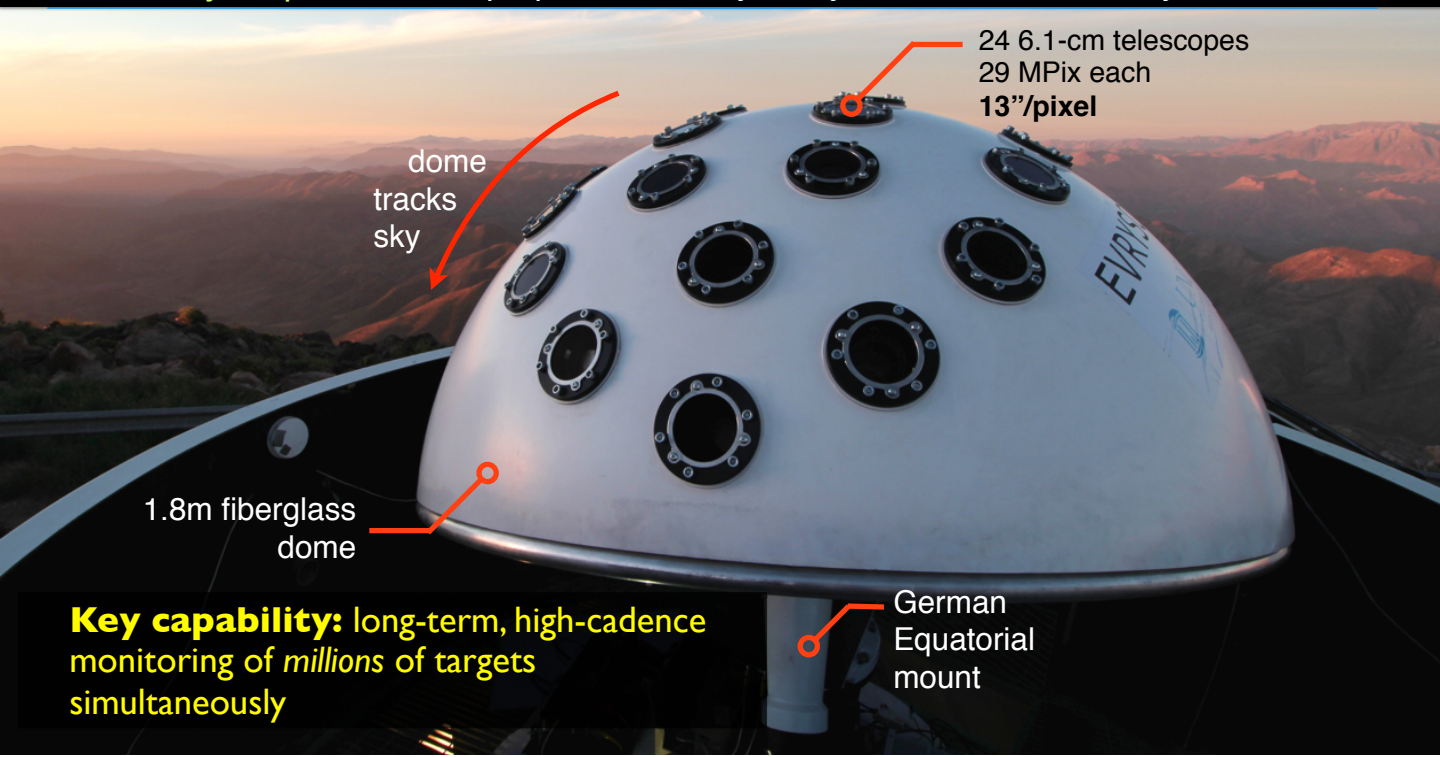
with

NICK LAW (Evryscope P.I.), **Jeff Ratzloff**,
Hank Corbett, **Ward Howard**, & **Octavi Fors**

*Department of Physics & Astronomy
UNC Chapel Hill*



The Evryscope: a telescope pointed nearly everywhere simultaneously



24 6.1-cm telescopes
29 MPix each
13"/pixel

dome
tracks
sky

1.8m fiberglass
dome

German
Equatorial
mount

Key capability: long-term, high-cadence monitoring of *millions* of targets simultaneously

The Evryscope: a telescope pointed nearly everywhere simultaneously

"Bug-eyed"

- Popular Mechanics



The Evryscope: a telescope pointed nearly everywhere simultaneously

"Bug-eyed"

- Popular Mechanics

**"Looks more like an architectural
folly than a telescope"**

- Science



The Evryscope: a telescope pointed nearly everywhere simultaneously

“Bug-eyed”

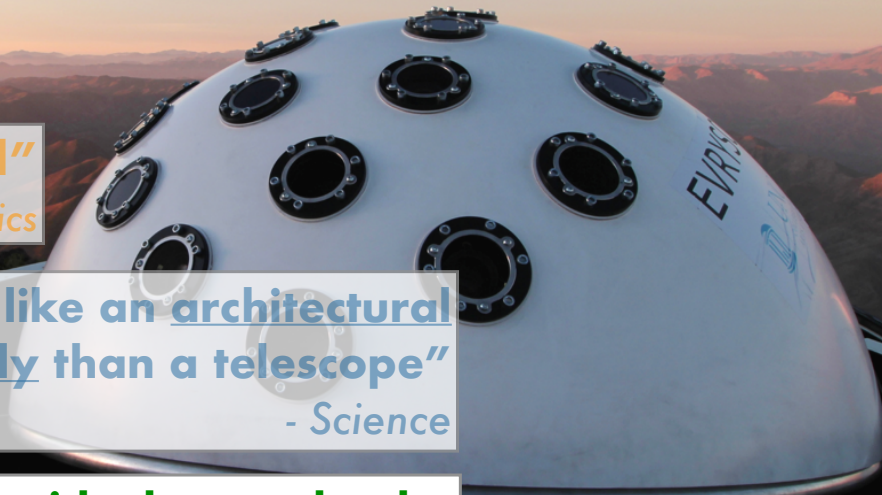
- *Popular Mechanics*

“Looks more like an architectural folly than a telescope”

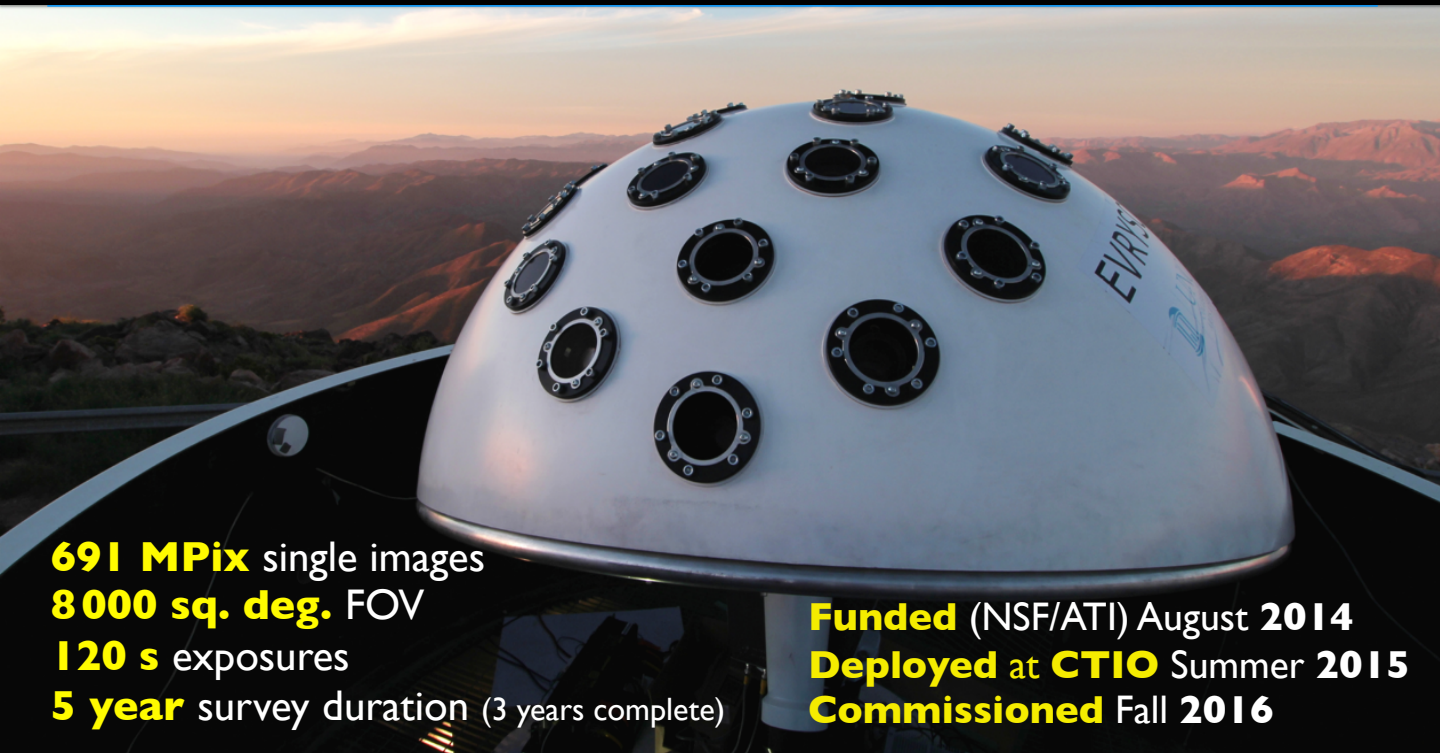
- *Science*

“Like an upside-down colander repurposed into a Star Trek prop”

- *Science News*



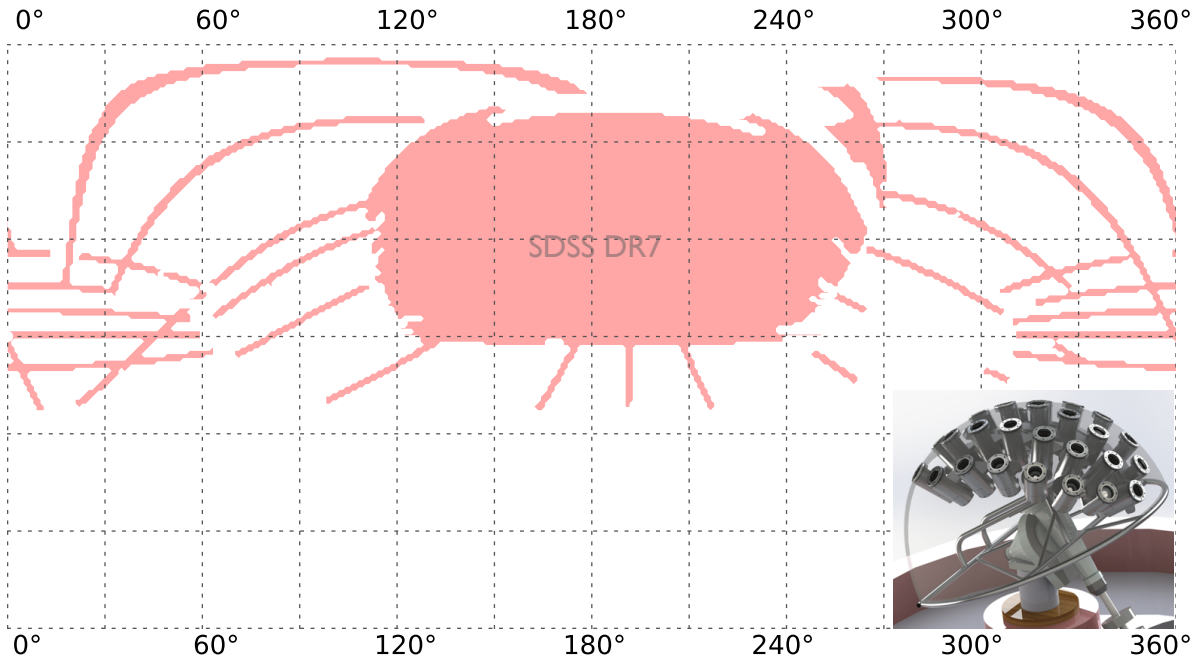
The Evryscope: a telescope pointed nearly everywhere simultaneously



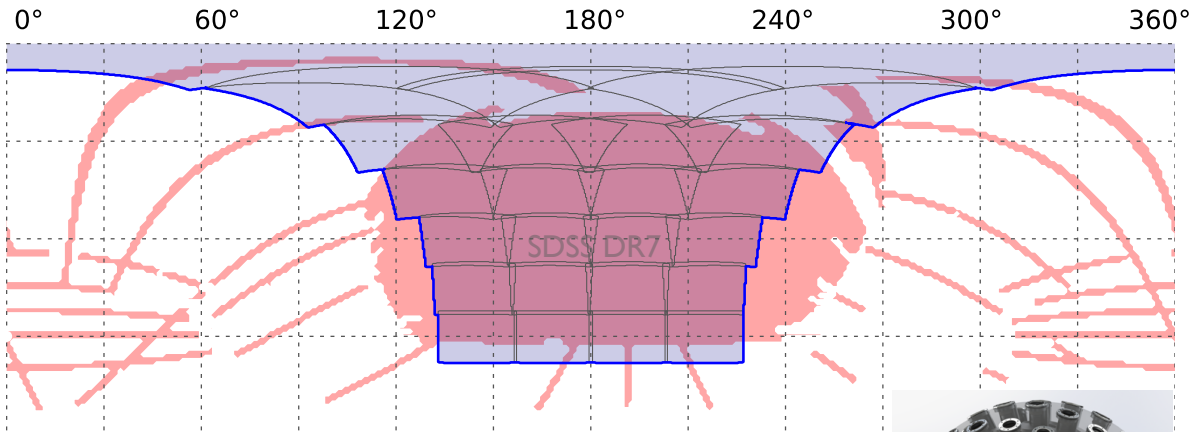
691 MPix single images
8000 sq. deg. FOV
120 s exposures
5 year survey duration (3 years complete)

Funded (NSF/ATI) August **2014**
Deployed at **CTIO** Summer **2015**
Commissioned Fall **2016**

Evryscope Sky Coverage (flipped to North)



Evryscope Sky Coverage (flipped to North)

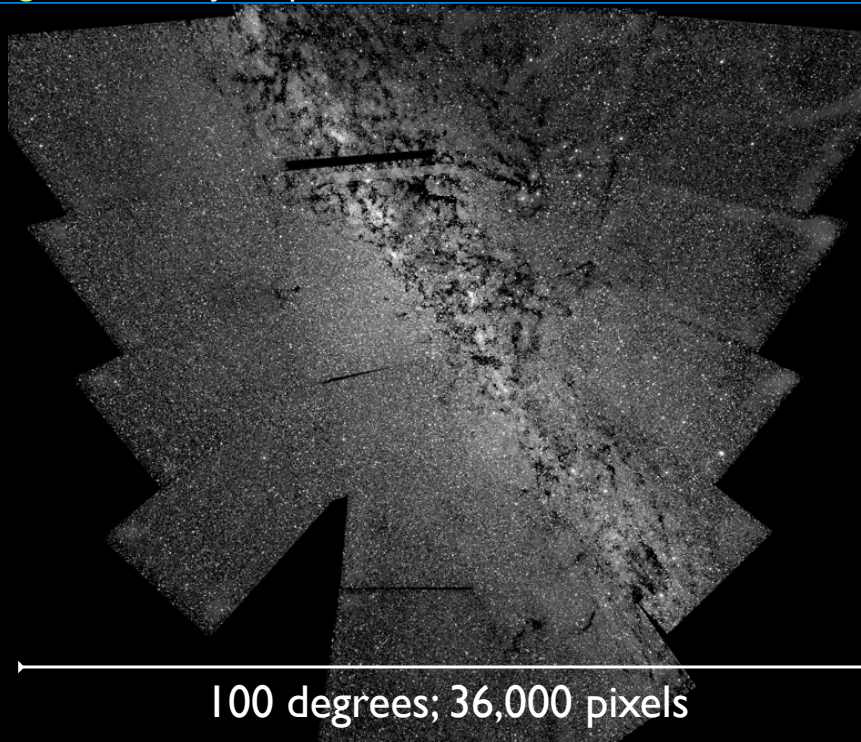


$g \sim 16$ every 2 minutes
 $g \sim 17.5$ every hour
3 mmag every 16 min. @ $g = 12$



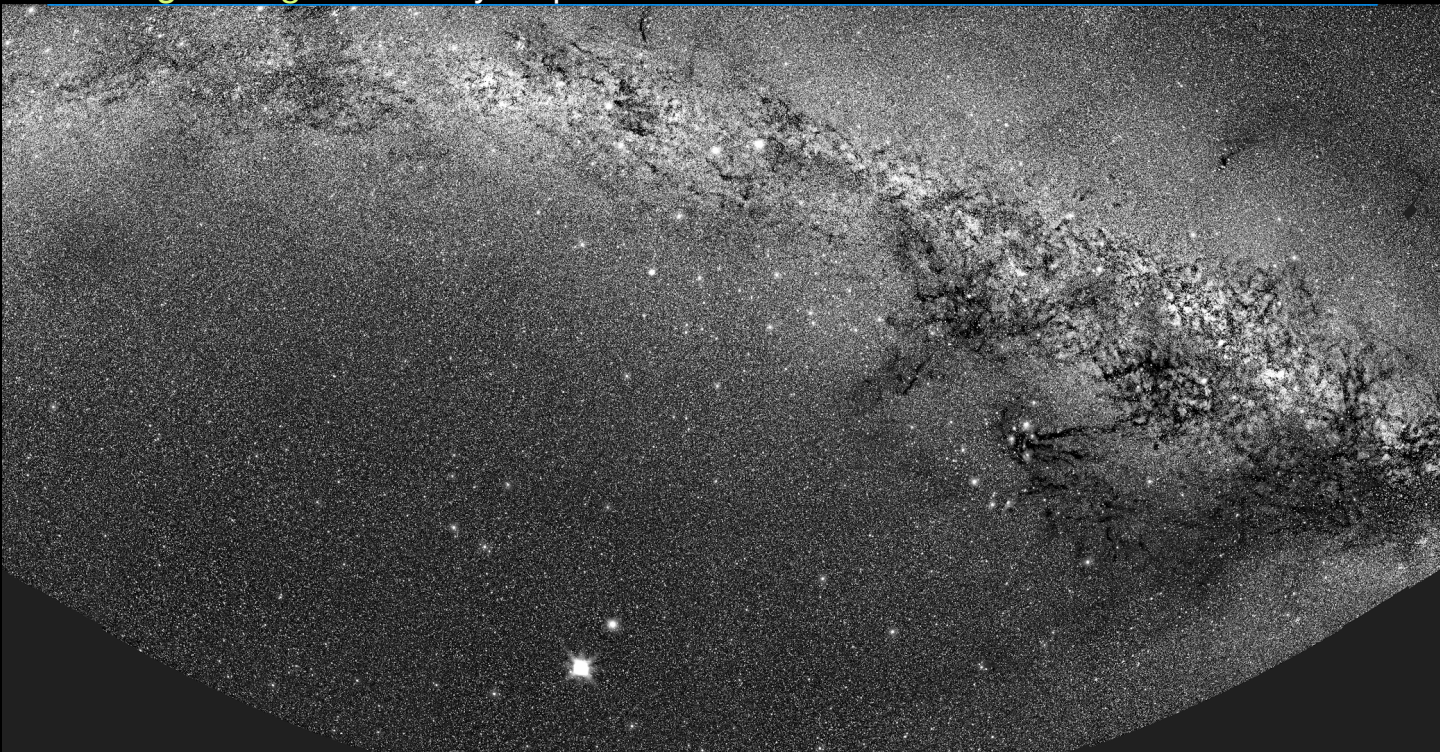
0° 60° 120° 180° 240° 300° 360°

A *single image* from Evryscope.

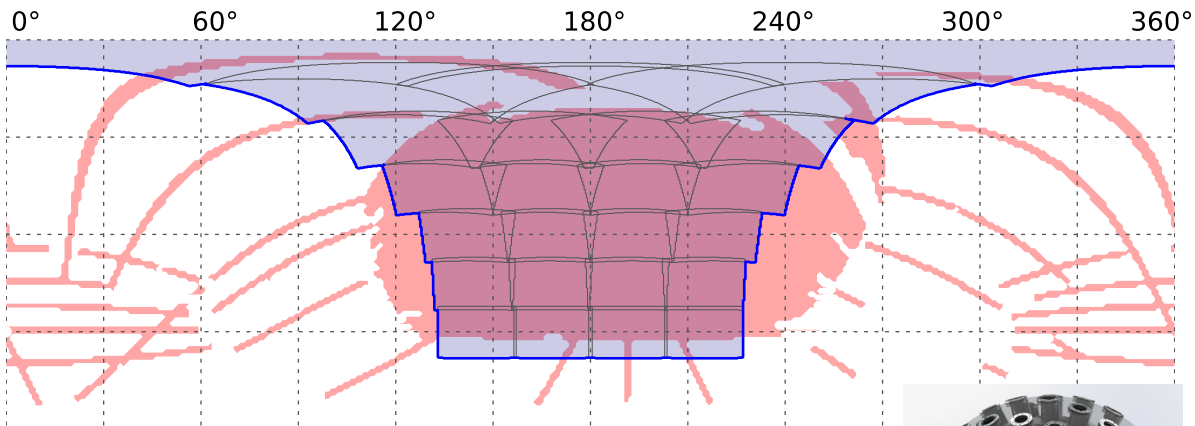


100 degrees; 36,000 pixels

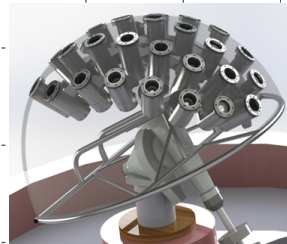
A *single image* from Evryscope.



Evryscope Sky Coverage (flipped to North)

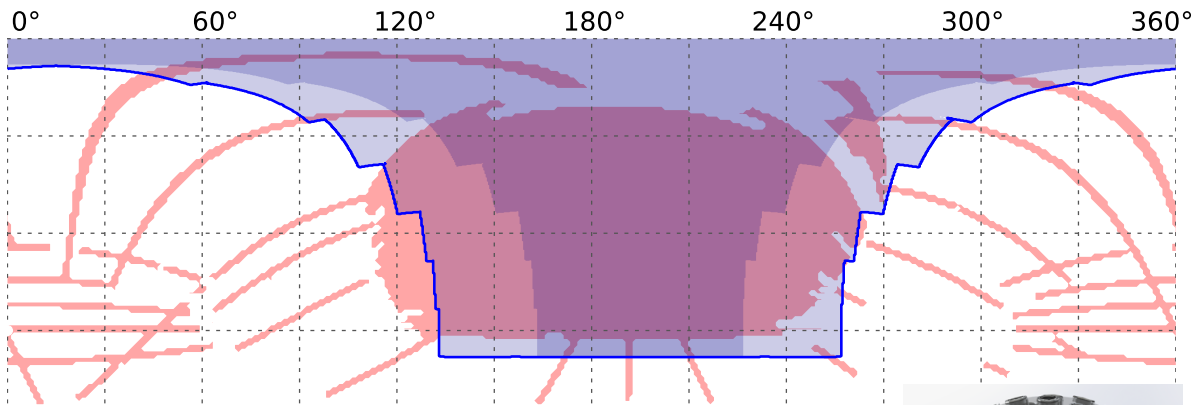


g~16 every 2 minutes
g~17.5 every hour
3 mmag every 16 min. @ g=12

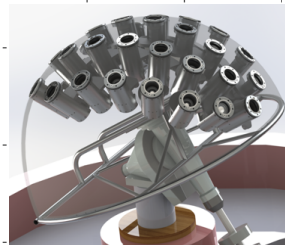


0° 60° 120° 180° 240° 300° 360°

Evryscope Sky Coverage (flipped to North)

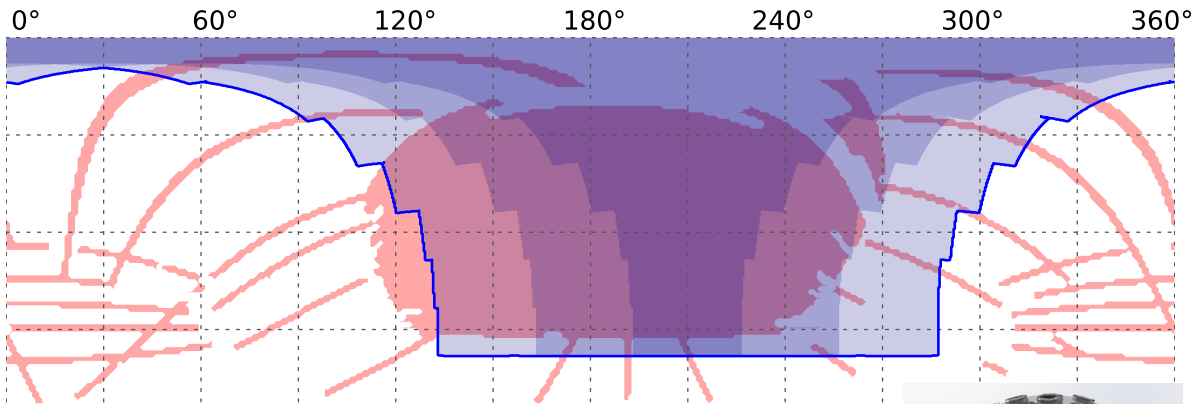


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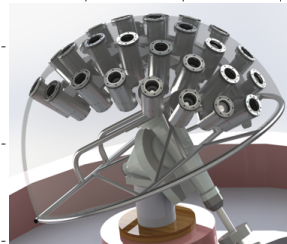


0° 60° 120° 180° 240° 300° 360°

Evryscope Sky Coverage (flipped to North)

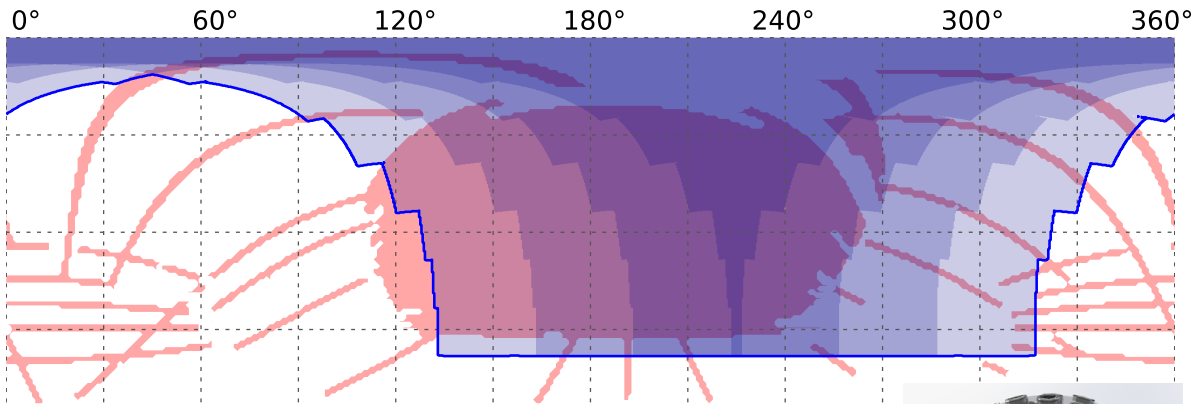


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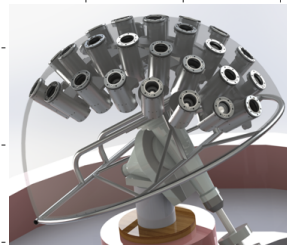


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Evryscope Sky Coverage (flipped to North)

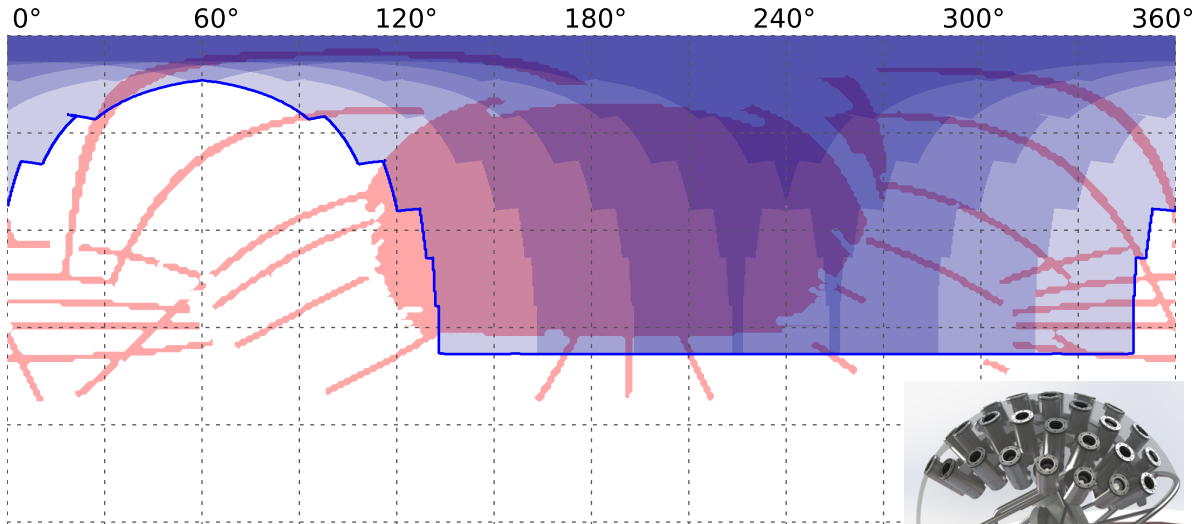


g~16 every 2 minutes
g~17.5 every hour
3 mmag every 16 min. @ g=12



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Evryscope Sky Coverage (flipped to North)



20 000 - 35 000 observations (g-filter)
per target, per year,
for all objects brighter than $g \sim 16.5$ mag!

