

Limitations of Single Dish Astronomy

Fundamentals of Radio Interferometry: Chapter 1, Section 10

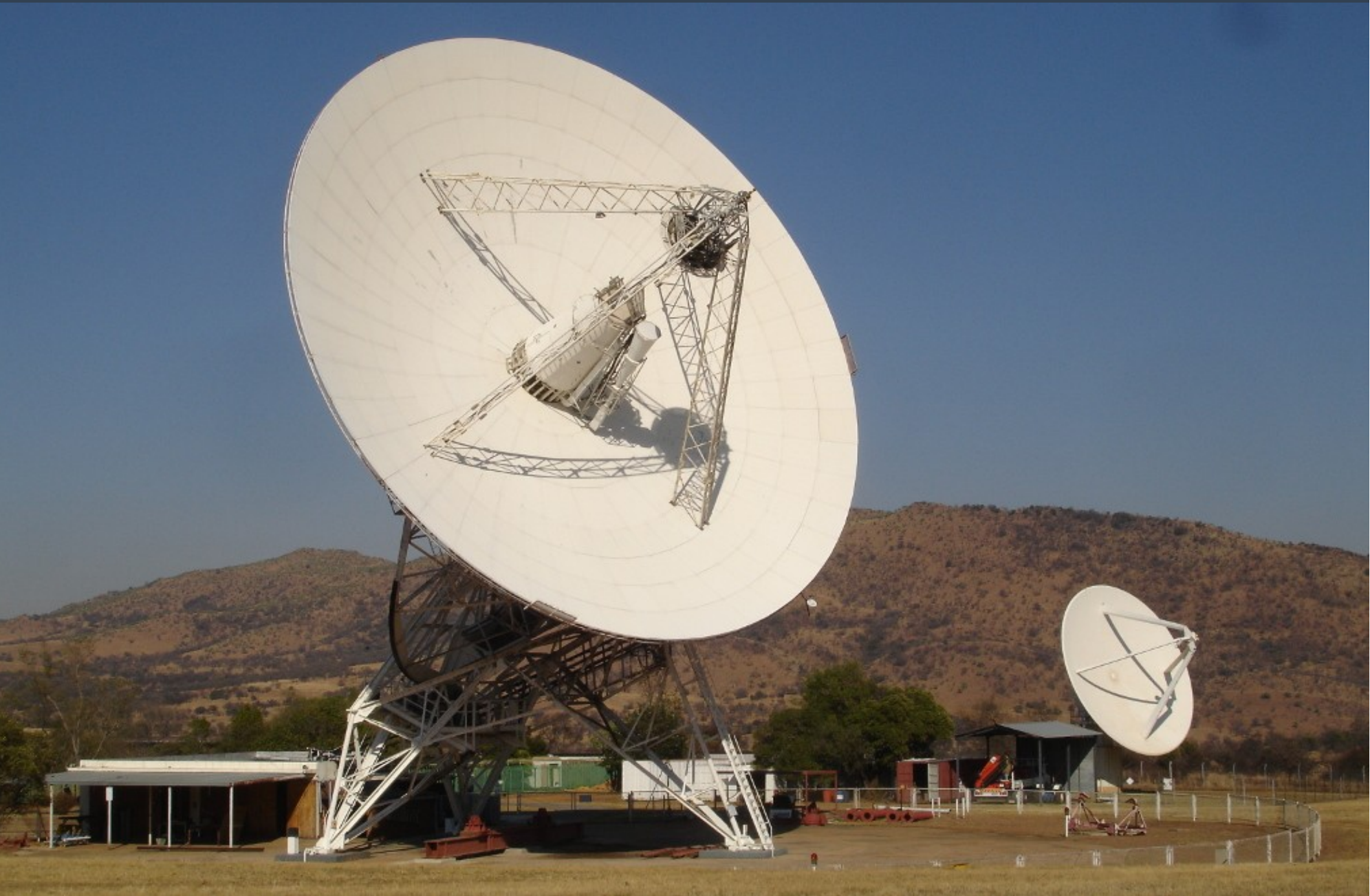


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SKA-SA/Rhodes University

NASSP 2016

26 m Dish at Hartebeesthoek Radio Astronomy Observatory (HartRAO)



KAT-7



Angular Resolution

Aperture Size: $A \propto D^2$

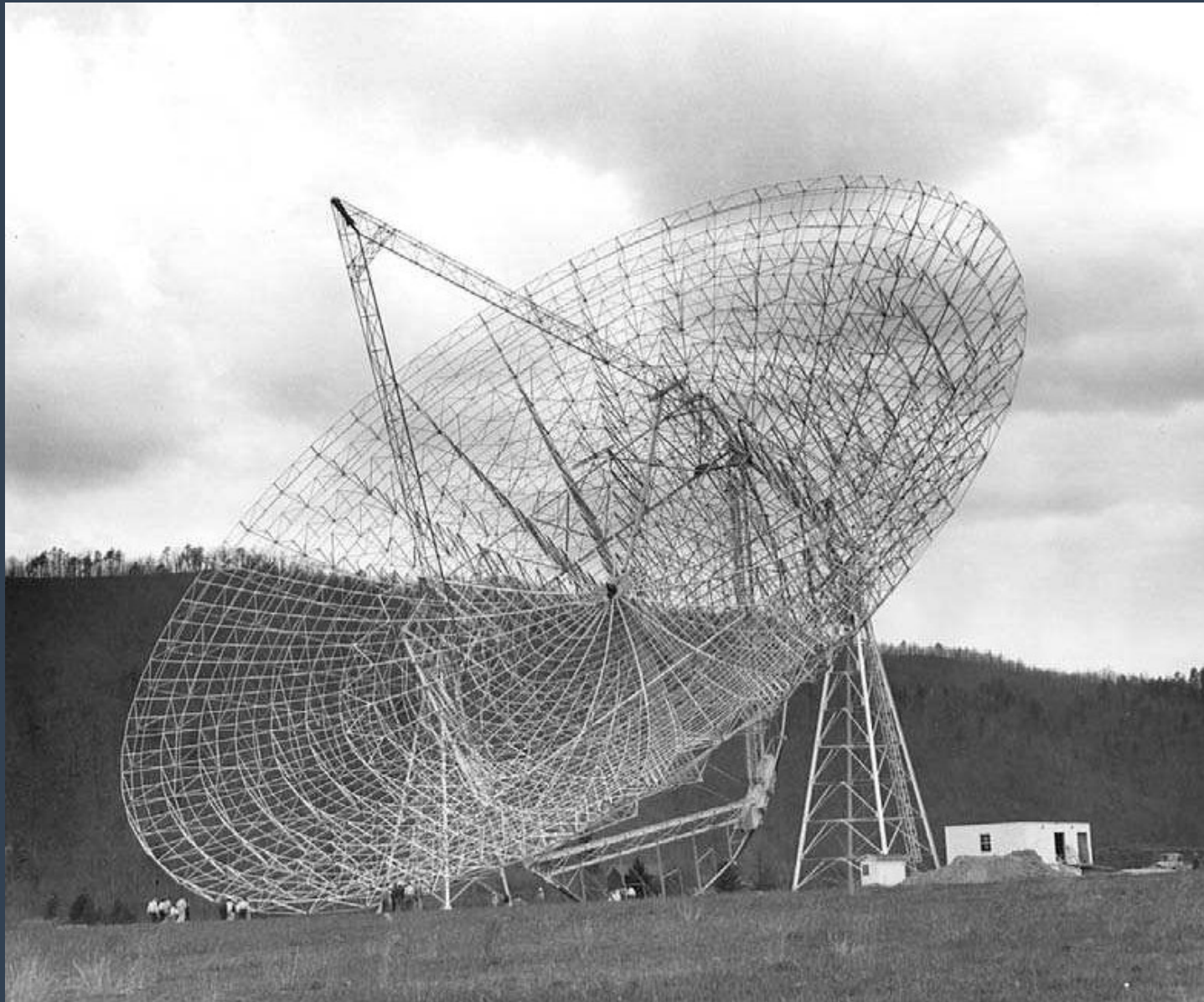
Rayleigh criterion: $\Delta\theta = 1.22 \frac{\lambda}{D}$

Angular Resolution: $\Delta\theta$

Dish Diameter: D

Observing Wavelength: λ

Physical limitations of single dishes



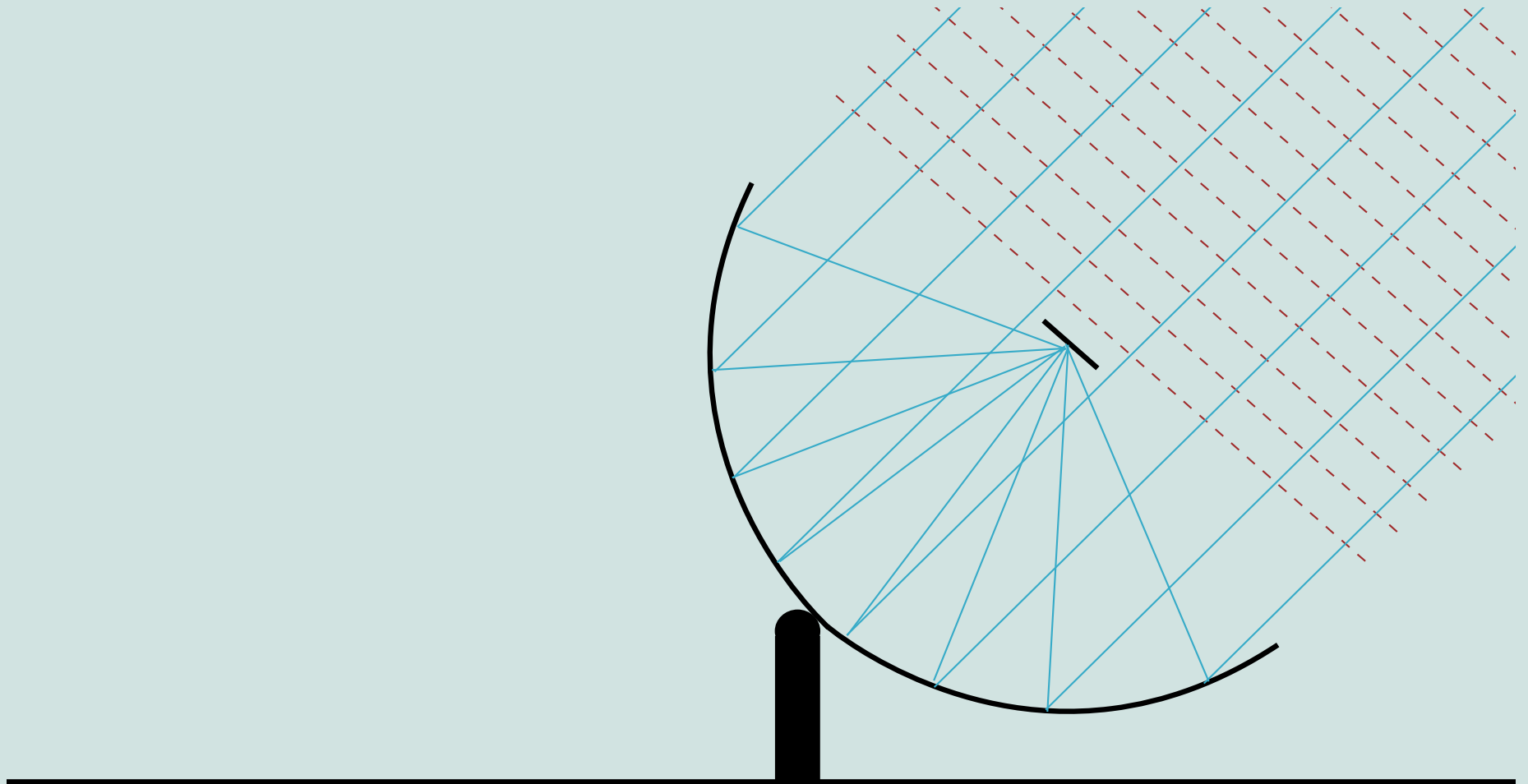
Physical limitations of single dishes



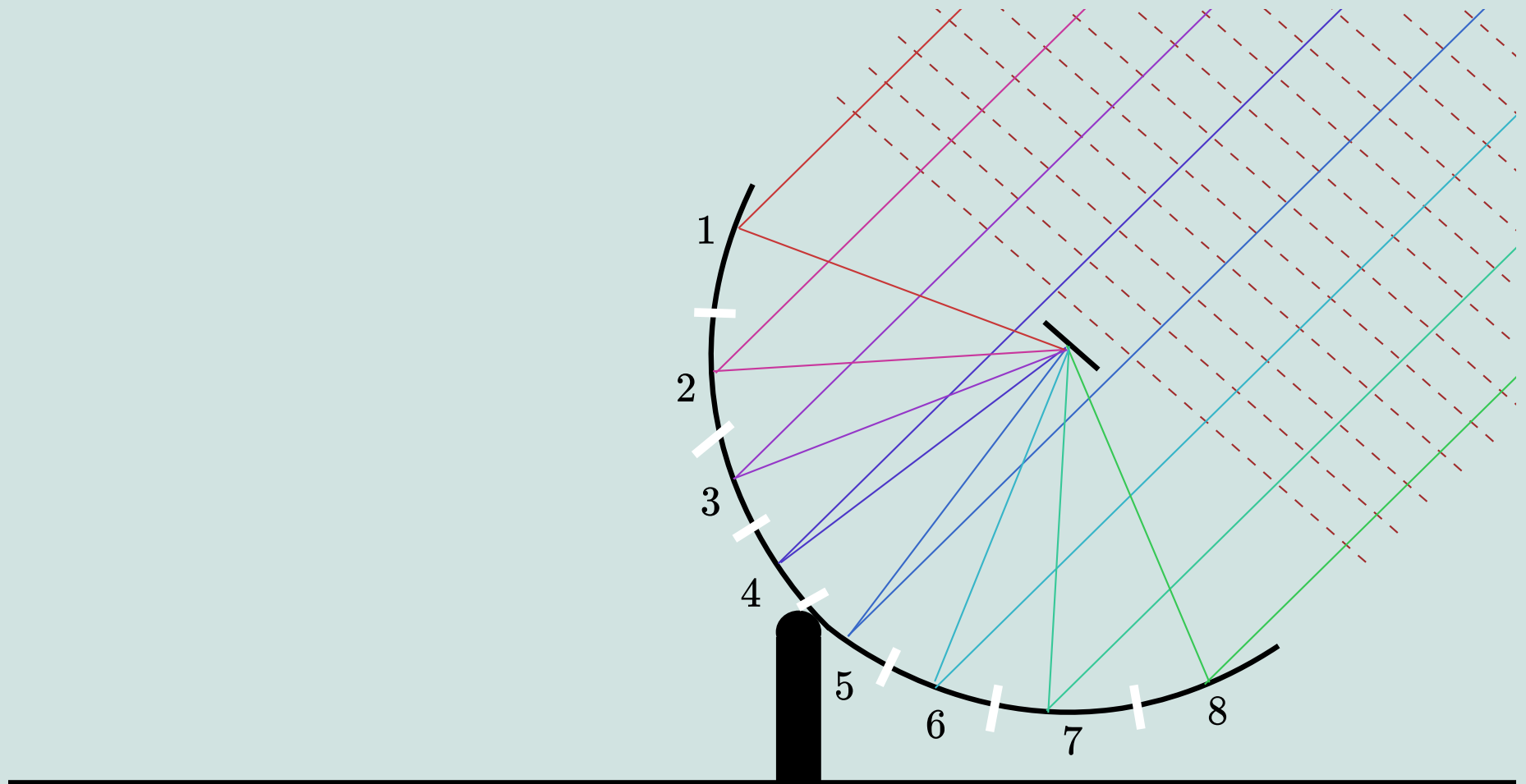
Novel Solutions to Physical Limits



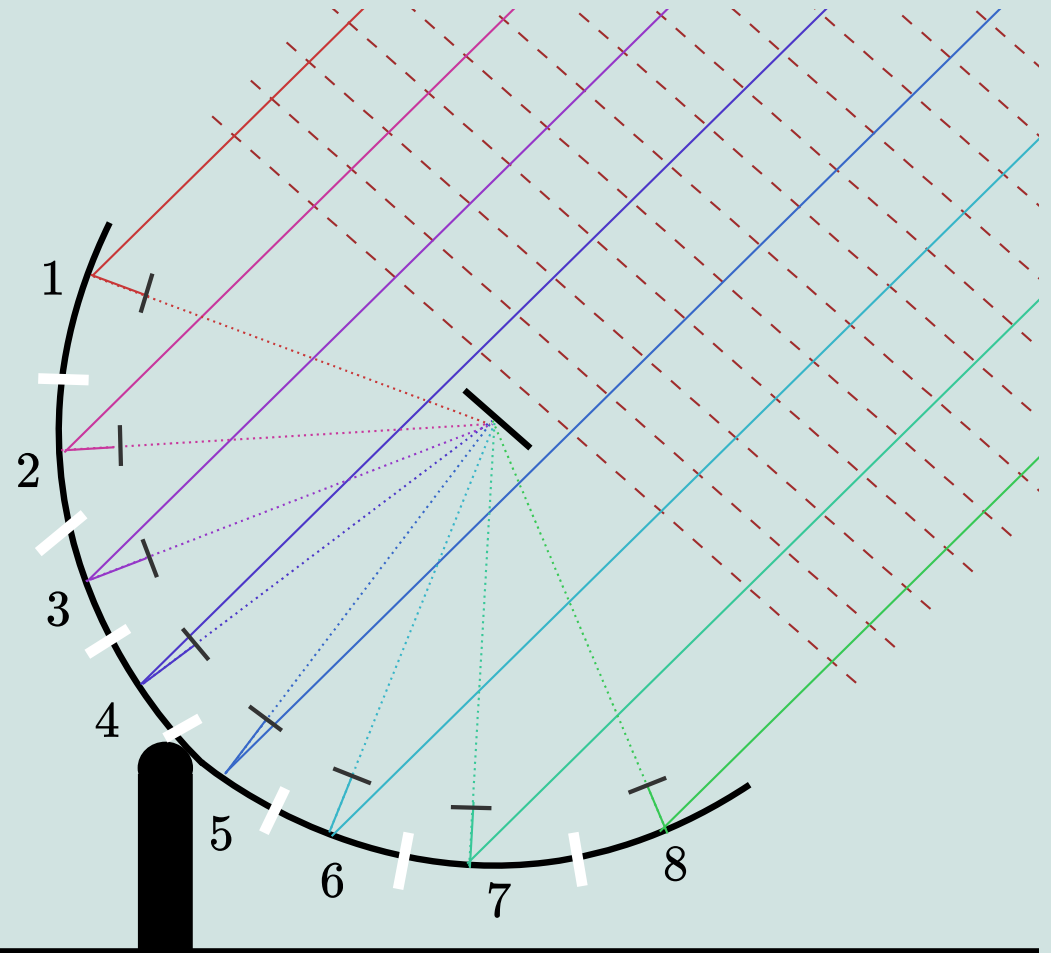
Creating a Synthesized Telescope



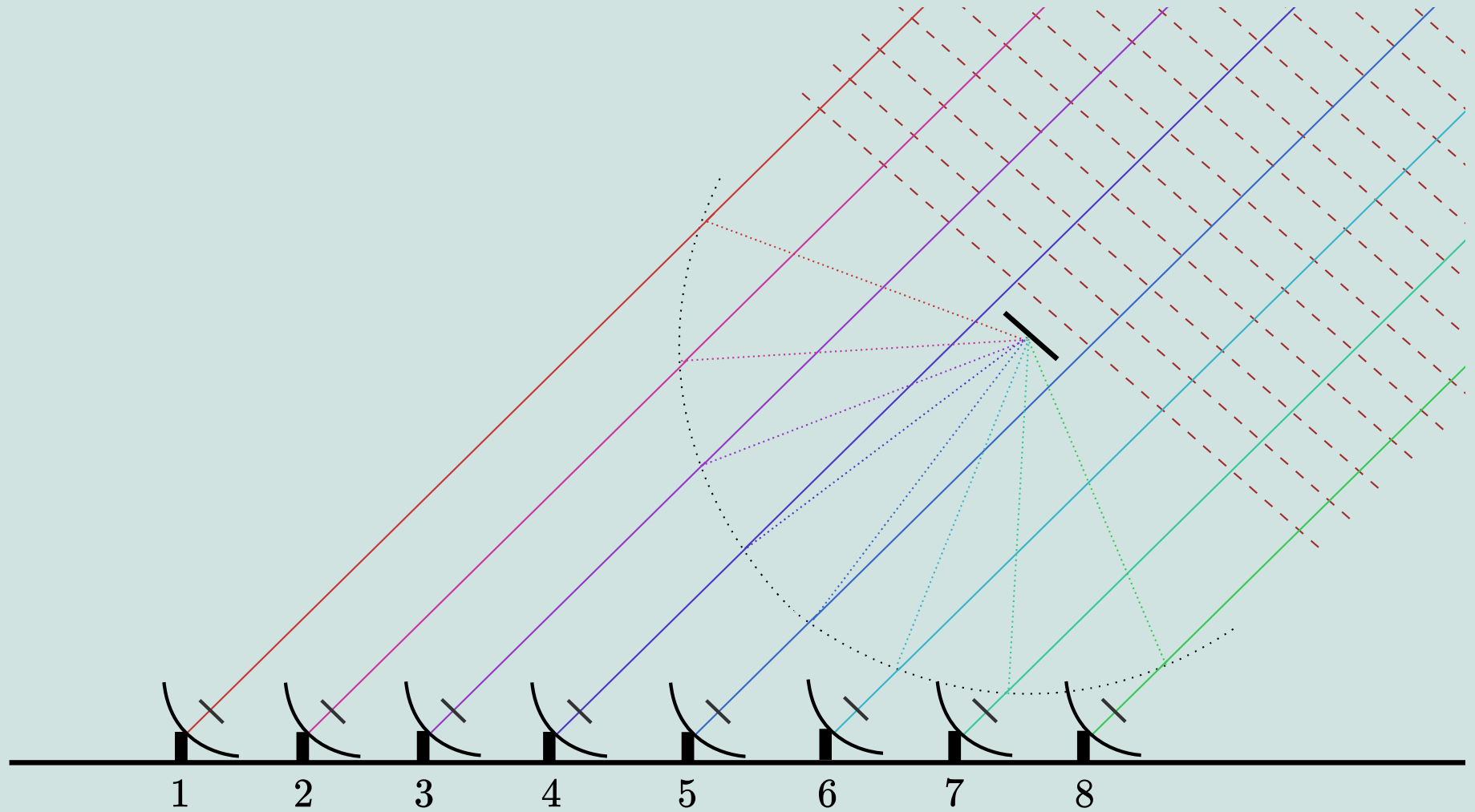
Creating a Synthesized Telescope



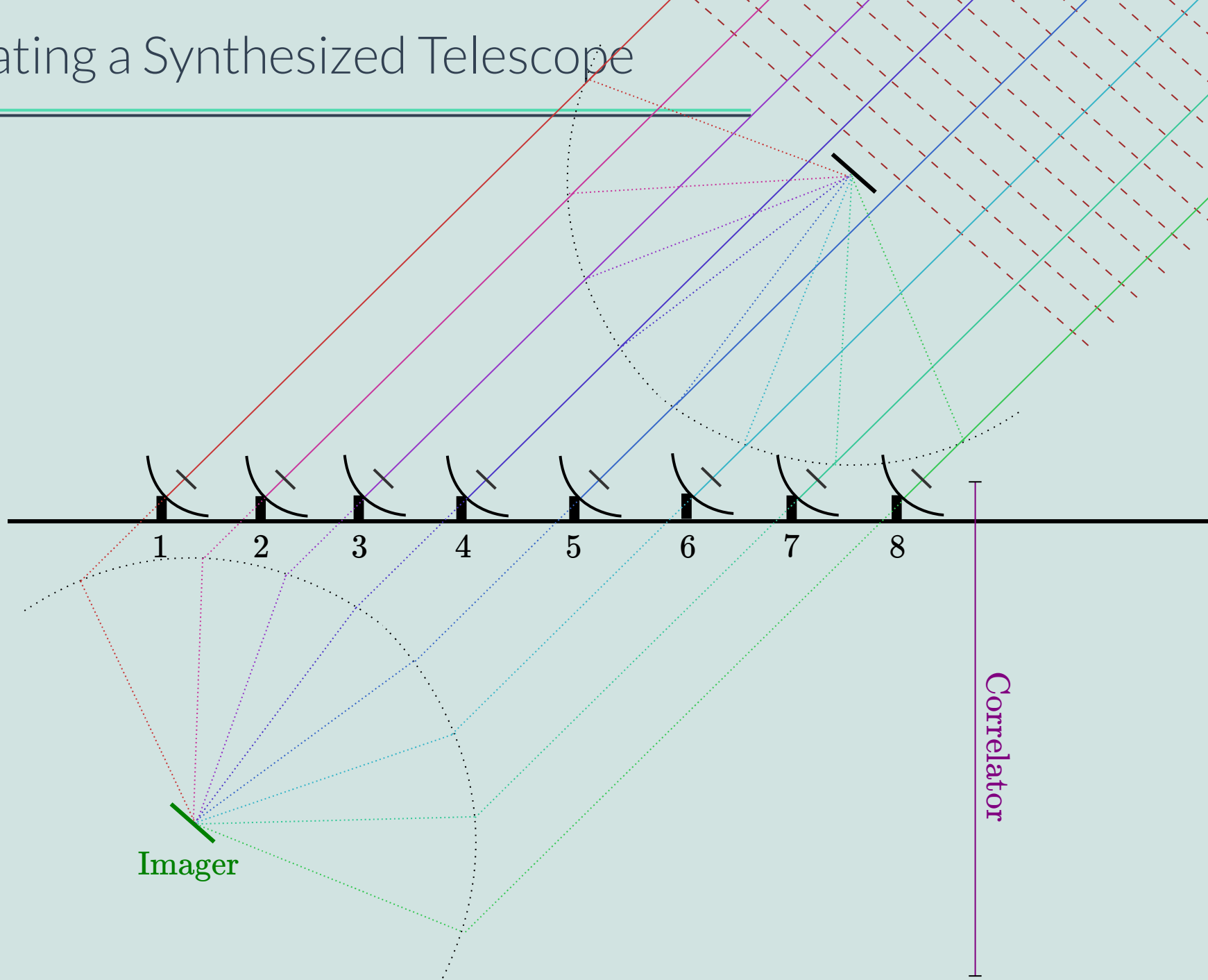
Creating a Synthesized Telescope



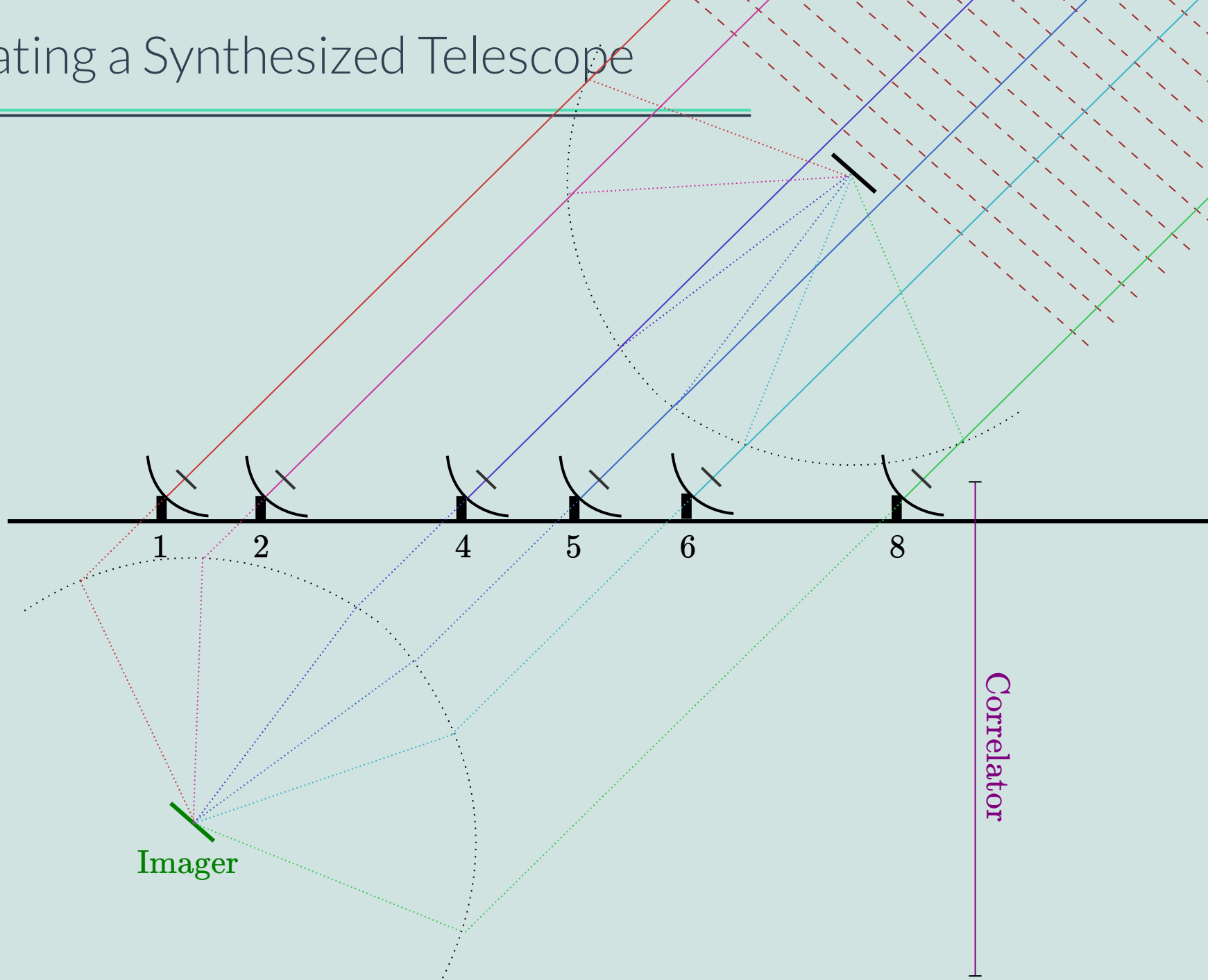
Creating a Synthesized Telescope



Creating a Synthesized Telescope



Creating a Synthesized Telescope



KAT-7: A Synthesized Telescope of Telescopes

