

4 Cite some examples of modern instruments and telescopes and the discoveries made with them.

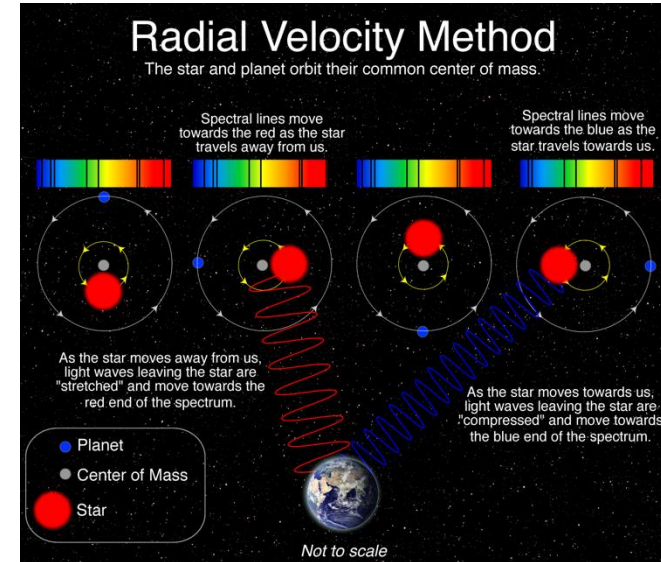
telescope / instrument	discovery
JWST/ NIRCam	most distant galaxy, faint AGN, high-z QG candidates
JWST / NIRSpec	confirmation of distant astronomical object
Subaru / HSC	Wide field survey (galaxy morphology, faint QSO, environmental effect)
VLT / MUSE	CGM study, kinematics
ALMA	distant galaxy, dusty galaxy, gas kinematics

10 What methods and instruments are required to detect the Doppler reflex motion of a star due to the presence of an orbiting planet?

To detect Doppler reflex motion, need very high spectral resolution spectroscopy
→ need calibration (reference)

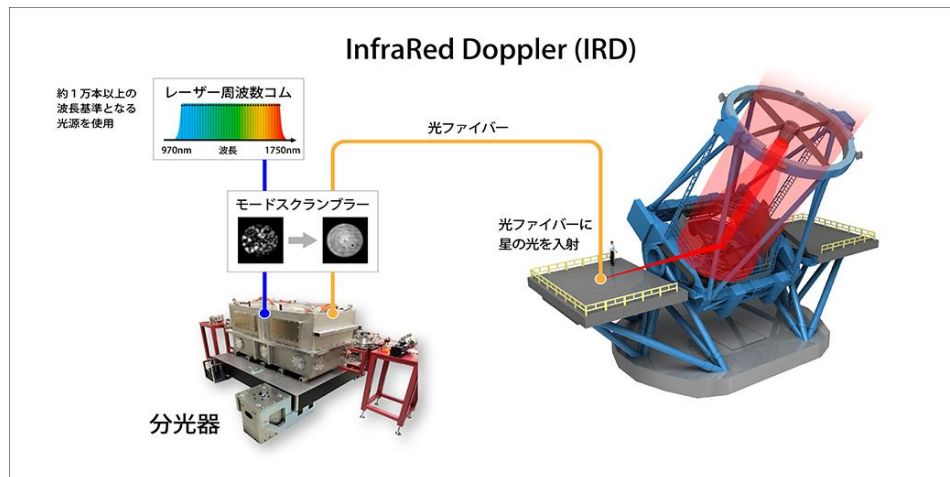
gas absorption cell (absorption)

frequency comb spectroscopy (emission)

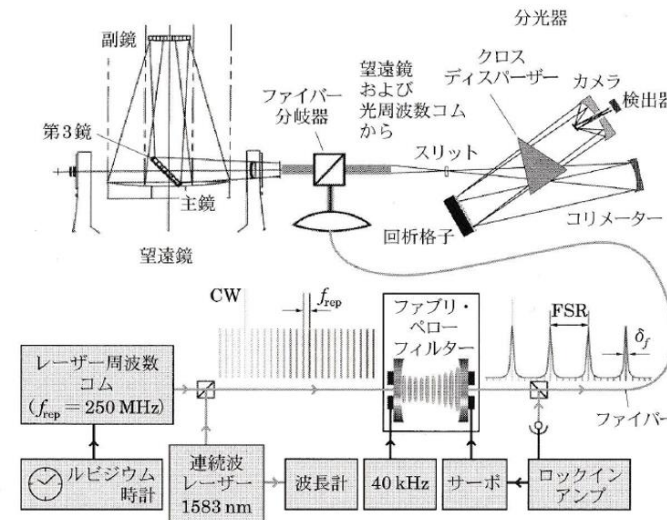


http://exoplanets.astro.yale.edu/instrumentation/iodine_cells.php

<https://lco.global/spacebook/radial-velocity-method/>

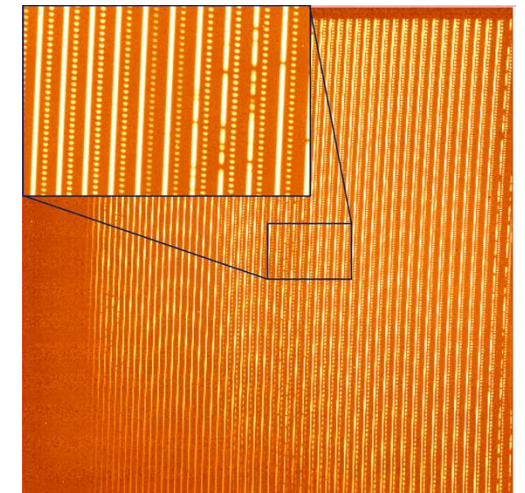


<https://subarutelescope.org/jp/subaru2/instrument/ird/>



<https://astro-dic.jp/frequency-comb/>

田村元秀著『太陽系外惑星』新天文学ライブラリー1巻（日本評論社）の図6.5を転載



https://abc-nins.jp/press/20180702/20180702_IRD_main.html