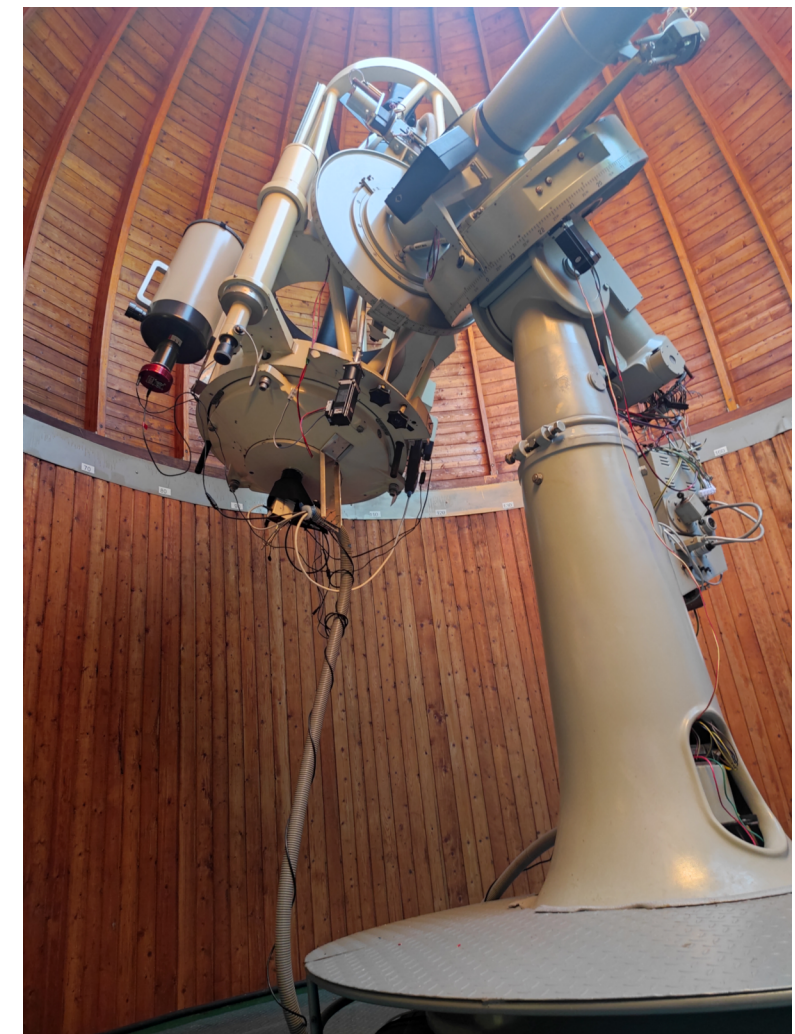


Low-cost automatisisation of manual equatorial telescope made by Carl Zeiss Jena II.

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Abstract: Cassegrain telescopes made by Carl Zeiss (Jena, Germany) with a 60cm primary mirror are optical instruments of high quality. The only major drawback is the manual operation of their equatorial mount, including fine motions. These telescopes are useful for photometry of stellar and deep sky objects (galaxies, clusters) with visual magnitudes up to $V = 18$ (depending on the detector). In order to slew and track the telescope, it is necessary to add an extra gearbox and a motor to both axes. Moreover, it is important to measure very precisely the actual position in both: the hour angle and the declination. The angular resolution of the (absolute) rotational encoders depends on the focal instrument and observing program. For fiber-fed or long-slit spectroscopy, the required angular resolution is in the order of tenths of an angular second. Concerning CCD photometry, a lower resolution is sufficient. For the operation of the motors of our 60cm Cassegrain telescopes and reading of encoders, we have developed a specialized (upgraded) control electronics and firmware. The telescope is planned to be used with a custom-made INDI driver for Ekos planetarium under Kstars software. To enable fully remote observations, we automated the telescope unpacking (mirror covers) using linear actuators and the dome rotation and slit opening, as well.



*60cm Cassegrain telescope made by Carl Zeiss
(Jena, Germany) in the pavilion G1
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Slovak Academy of Sciences*

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