

# Wide-field Spectroscopic Telescope design options

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Wide-field Spectroscopic Telescope (WST) is a project of a next generation 10m-class telescope intended for spectroscopic surveys. It will include a multi-object spectrograph (MOS) unit covering a large field from 2.5 to 5 square degrees and providing medium (up to R7000) and high (R40 000) resolution spectra in the range of 360-1300 nm with a high multiplex of 20 000 and 2000, respectively. It will work simultaneously with a panoramic integral field spectrograph (IFS) operating in 79 square arcmin field with the spectral resolution of R5000 in the range of 360-970 nm. The telescope design must provide coverage of the maximum possible field of view, with a good and uniform seeing-limited image quality and minimum obscuration. The MOS branch requires a fast F/3 beam, while the IFS should work with the F/# of approximately 30. In addition, it should have atmospheric dispersion compensation (ADC) functionality. Currently we consider two telescope design options, which can fit these challenging specifications –a Cassegrain telescope with wide-field lens corrector and a Four-mirror anastigmat. In both of the cases the ADC is implemented with a set of decentering lenses. In each case the IFS branch is fed by a Korsch-type system. In the present work we discuss the main difficulties related to the telescope performance and packaging and possible technical solutions and compromises.

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