

CAFE: Calar Alto Fiber-fed Echelle spectrograph

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Abstract

The Calar Alto Fiber-fed Echelle spectrograph (CAFE) is an instrument under construction at CAHA to replace FOCES, the high-resolution echelle spectrograph at the 2.2 m telescope of the observatory. FOCES is a property of the Observatory of the Munich University, and it was recalled it from Calar Alto in 2009. The instrument comprised a substantial fraction of the telescope time during its operational life-time, and it is due to that it was taken the decision to build a replacement. CAFE shares its basic characteristics with those of FOCES. However, significant improvements have been introduced in the original design, the quality of the materials, and the overall stability of the system. In particular: (i) a new calibration Iodine cell is foreseen to operate together with the standard ThAr lamps; (ii) the optical quality of all the components has been selected to be $\lambda/20$, instead of the original $\lambda/10$; (iii) an isolated room has been selected to place the instrument, thermalized and stabilized against vibrations (extensive tests have been performed to grant the stability); (iv) most of the mobile parts in FOCES has been substituted by fixed elements, to increase the stability of the system; and finally (v) a new more efficient CCD, with a smaller pixel has been acquired. It is expected that the overall efficiency and the quality of the data will be significantly improved with respect to its precesor. In particular, CAFE is design and built to achieve resolutions of $R \sim 70000$, which will be kept in the final acquired data, allowing it to compete with current operational extrasolar planets hunters. After two years of work all the components are in place. The instrument is now finally assembled, and we are performing the the first alignment tests. It is expected that the commissioning on the laboratory will finish at the end of 2010, followed by the commissioning on telescope along the first semester of 2011. If everything goes well, we will offer the instrument in a shared-risk mode for the second semester of 2011.