
Orienteering with synchronization constraints in a telescope scheduling problem

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Abstract

EMIR (Espectrógrafo Multiobjeto Infrarrojo) is a common-user, wide-field, near-infrared camera-spectrograph operating in the near-infrared wavelengths 0.9–2.5 μm , using cryogenic multi-slit masks. From a Operations Research perspective, this device is a multiprocessor machine which is able to process several task in parallel. Each task is the observation of a specific region in the sky. In order to improve the performance of the instrument by covering as many targets as possible within the use time windows, exact algorithms, based on the resolution of a variation of the well known Orienteering Problem, are proposed to provide with an optimal schedule.

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