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Detecting hot Jupiters and hot Neptunes through transit searches

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The observation of eclipsing events due to transiting extrasolar giant planets (EGPs), initially only successful with short-period planets already known from radial velocity variations, has recently also become a significant source of independent detections of close-in EGPs, with seven new discoveries in the last year alone. This success is largely due to large-scale photometric monitoring campaigns, foremost of all the Optical Gravitational Lensing Experiment (OGLE). This survey has turned up 137 candidates for planetary transit events to date. All these candidates, however, require further analysis to weed out false positives, and eventual confirmation through precise radial velocity determination. We present results from an ongoing campaign to analvse the best OGLE candidates with low-resolution spectroscopy and high-resolution Doppler measurements. Detailed modelling of the physical parameters of the primary star using synthetic spectra, and comparison to atmosphere and evolutionary models for low-mass stellar, brown dwarf and planetary companions in the first step allows to put much tighter constraints on the system parameters. More massive stellar companions can also already be filtered out before continuing with more time-demanding high-resolution observations, as their high-amplitude radial velocity variation would already be detectable at moderate resolution. Our observations so far identified two candidates as low-mass stellar companions, and one object of still uncertain status. New targets will, by including shallower transit events, allow to detect smaller companions and thus enable us to probe for EGPs down to the Neptune-size range.