Highlights of Astronomy, Volume 15
XXVIIth IAU General Assembly, August 2009
Ian F. Corbett, ed.

doi:10.1017/S1743921310010975

Selection of most promising CoRoT candidates for radial-velocity follow-up

Ronaldo Da Silva[1] **and Adriana Silva-Valio**[1,2]

[1]Instituto Nacional de Pesquisas Espaciais, Brazil, [2]Mackenzie University, Brazil

Abstract. We used the method of Silva & Cruz (2006), which distinguishes between planetary and stellar companions by fitting transit light curves, to select the most promising CoRoT candidates to be monitored with radial-velocity measurements. Testing this method on the light curves of confirmed CoRoT exoplanetary systems shows that the estimated radius for such planets is smaller than $2\,R_{Jup}$, while for most of the light curves in which no planet has been detected, the secondary companion has an estimated radius larger than $2\,R_{Jup}$. We present preliminary results concerning other light curves for which no planet has been detected yet.

The huge number of data released by the CoRoT mission makes very hard the selection of candidates to be monitored with radial-velocity measurements. Silva & Cruz (2006) proposed a method based on transit light curve fitting to distinguish between planetary and stellar companions by estimating the radius of the secondary. Here, we use the same method to select the best CoRoT candidates for planetary systems to be observed with radial velocities. After fitting a model to the observed transit, we determined the radius R_2 of the secondary companion (using the Kepler's third law and mass-radius relations), the semimajor axis, and the inclination angle of the orbital plane. We consider as good planetary candidates those objects for which we obtain $R_2 < 2\,R_{Jup}$.

At present, we have analysed light curves from the first three public runs. The Table below shows examples of our results. Triangular-shaped transits are excluded by our method because they are probable caused by grazing eclipses of stars in a binary system. Apparently good candidates can also be excluded because they have have $R_2 > 2\,R_{Jup}$ in spite of a planet-like transit shape. For the moment, we have a total of 22 good candidates for planetary systems. This is still ongoing work and soon we hope to be able to share a larger list of candidates to be monitored in the context of the RV follow-up.

CoRoT ID	Run	P [days]	a [AU]	i [deg]	M_1 [$M_\odot$]	R_1 [$R_\odot$]	R_2 [R_{Jup}]	Remarks
0102811578	IRa01	1.66882	0.034	77	1.6	2.0	3.15	triangular
0101095286	LRc01	5.053	0.092	71	3.7	7.0	4.11	triangular
0102855534	IRa01	21.72	0.207	> 89	2.2	3.1	3.20	apparently good
0211660858	SRc01	8.825	0.134	> 89	2.2	3.1	4.09	apparently good
0102763847	IRa01	10.5328	0.083	88	0.7	0.7	0.80	good candidate
0101086161	LRc01	6.2125	0.068	86	1.1	1.2	0.96	good candidate

Acknowledgements

We thank the financial support from Fundação de Amparo a Pesquisa do Estado de São Paulo (FAPESP) in the form of a fellowship.

References

Silva, A. V. R. & Cruz, P. C. 2006, *ApJ* 642, 488