

Binaries in the Trans-Neptunian population

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Our main scientific goal is to characterize physical properties of Trans-Neptunian Objects (TNOs). In the past, we used different analyses of time series photometry through which we studied the rotational light curves of these objects. As a result, we obtained rotational periods of a large sample of TNOs. Our own results and other results from the literature lead to a mean period of TNOs of around 8 hours; nevertheless, the reality is that shorter and longer periods exist. One of the explanations of the extremely slow rotators is that these objects could be part of a binary system or even they could have large satellites. The secondary body could slow down the main body. On the other hand, the extremely fast rotators could have broken-up to form satellites systems or even unbound pairs like in the asteroid belt. However, from light curve analysis alone it is often not possible to find out whether these objects are binaries or not. We need other techniques to obtain additional information in order to contrast all data. In this work we present objects with anomalies in their light curves due to slow rotation periods or even due to other characteristics that guide us to think about the possibility of a binary system. We discuss prospect of detectability with different techniques. The research leading to these results was partially supported from the European Union's Horizon 2020 Research and Innovation Programme, under Grant Agreement no 687378.