New binary candidates among V-type candidates

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Although we have surveyed more than 80 V-type asteroids and their candidates, some signs of brightness attenuation(s) were noticed in the lightcurves of only two such asteroids. In case of (16491) 1990 SA3 only one attenuation was detected. The lightcurve of (15031) Lemus consists of two additive periods. After subtraction of the shorter period the remaining shape of the lightcurve is bimodal with sharp minimum. The second minimum is not covered by observations. It could be a synchronous binary (the orbital period of the satellite and its rotation period could coincide). We also detected two periods for asteroid (7302) 1993 CQ, though in that case no attenuations were observed. No attenuations were seen even for previously known doubly synchronous binary systems (809) Lundia and (854) Frostia. We report our rough estimates of the slope parameter G and absolute magnitude H for all these five asteroids. The survey was not focused on revealing binaries so the true ratio of binaries among V-type asteroids and their candidates could be higher than estimated from our result. Attenuations could be hidden because some asteroids were observed insufficiently and some sessions were noisy. More detailed observations (for example, among those with short rotation period and small amplitude of their lightcurve), covering also other apparitions and larger sample would be required to accomplish that goal. Extended effort would be needed to obtain binaries ratio within the Vesta family as none of the five asteroids mentioned above is located there, while we have surveyed 30 such objects. This work is supported by the VEGA grant 1/0670/13.