

**SEARCH AND CONFIRMATION OF V-TYPE ASTEROIDS BEYOND 2.5 AU USING SLOAN DIGITAL SKY SURVEY COLORS.** G. Masi<sup>1</sup>, S. Foglia<sup>2</sup> and R. P. Binzel<sup>3</sup>, <sup>1</sup> Physics Department University of Rome Tor Vergata, Viale della Ricerca Scientifica, 1, I-00100 Roma, Italy, gianluca@bellatrixobservatory.org <sup>2</sup> Osservatorio Astronomico di Suno, C. Gariboldi 11, I-28100 Novara Vereri NO, Italy, s.foglia@libero.it <sup>3</sup> Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, rpb@mit.edu

**Summary:** The 3rd Release of the Sloan Digital Sky Survey Moving Object Catalog (SDSS MOC3) has been compared with visible wavelength spectra available from the Small Main-Belt Asteroid Spectroscopic Survey (SMASS). Using 149 objects in common to both surveys, we create a translation from SDSS colors to the SMASS taxonomic system developed by Bus [1] allowing 40313 asteroids to be broadly categorized as being most similar to S-types, C-types, and V-types.

Our objective over the past several years [2,3] has been to find unusual objects for follow-up spectroscopy, such as V-types. Our candidate list is in good agreement with an independent analysis by Roig and Gil-Hutton [6] and an independent analysis by Moskovitz et al. [7,8]. A direct test of our V-type predictions by follow-up spectroscopic measurements confirms a V-type taxonomy for five of the six objects sampled. Four of these are located in the inner asteroid belt and are most likely considered as confirmed members of the Vesta family: 2823, 3344, 5481, and 50098. Most interestingly, our SDSS characterization correctly predicted the V-type nature for asteroid (21238) 1995 WV7, which is located at 2.54 AU, far from Vesta, on the far side of the 3:1 mean motion resonance. Independent confirmations have been made [6, 9, 10]. Asteroid 21238 may be a new example of a basaltic achondrite asteroid having no connection to Vesta. [2,3,4,5,9,11].

**References:** [1] Bus, S. J. (1999), Ph.D. Thesis, MIT. [2] Masi, G., Foglia, S., Binzel, R. P. (2006), Icarus submitted, not accepted. [3] Masi, G., Foglia, S., Binzel, R. P. (2007), Astron. Astrophys, submitted. [4] Binzel, R. P., Masi, G., Foglia, S. (2006), BAAS 38, 71.06. [5] Binzel, R. P., Masi, G., Foglia, S. (2007), LPSC XXXVIII, 38.1851. [6] Roig, F., Gil-Hutton (2006), Icarus 183, 411. [7] Moskovitz et al. (2006), BAAS 38, 59.23. [8] Moskovitz et al. (2007), LPSC XXXVIII, 38.1338. [9] Roig et al.2008, Icarus 194, 125. [10] Hammergren et al. (2006), arXiv:astro-ph/0609420. [11] Burbine, T.H, Buchanen, P. C., Binzel, R. P. (2008), LPSC XXXIX, 39.1391. [12] Lazzaro, D. et al. (2007), BAAS 39, 51.03.

No.	Designation	a (AU)	Predicted Type (a)	Observed Type
21238	1995 WV7	2.54	V (c,d)	V (b,c,e)
46308	2001 OZ104	2.93	V	
55270	2001 RT147	2.91	V	
59068	1998 VZ1	2.64	V	
63085	2000 WM135	3.14	V	
66905	1999 VC160	2.75	V (d)	V? (f)
68538	2001 VN125	2.77	V	
81584	2000 HF46	2.56	V	
103792	2000 DE11	2.59	V	
104559	2000 GZ70	2.90	V	
105041	2000 KO41	3.04	V (d)	
105124	2000 LC35	2.73	V	
110005	2001 SH64	2.67	V	
110270	2001 SQ249	2.70	V	
112382	2002 NV27	2.93	V	
113380	2002 SN10	2.56	V	
114544	2003 BN28	2.61	V	
116358	2003 YB94	2.81	V	
121046	1999 CD34	2.52	V	
135897	2002 TJ76	2.58	V	
148596	2001 RD33	2.75	V	
160903	2001 TO56	2.63	V	
162028	1995 UU55	2.55	V	
170015	2002 UE8	2.69	V	
	2001 PR10	3.13	V	
	2001 UA36	3.15	V	
	2002 JR73	2.75	V	
	2004 CJ6	3.15	V	
(a) Independently predicted by this group [2-5].				
(b) Independently confirmed by this group [2-5].				
(c) Independently predicted & confirmed by Hammergren [10].				
(d) Independently predicted by Roig et al. [6,9].				
(e) Independently confirmed by Roig et al. [6,9].				
(f) Possible confirmation by Lazzaro et al. [12].				

**Table 1.** Summary of our predictions for outer main-belt V-type asteroids based on SDSS colors, including known independent predictions and confirmations.