

Near-Earth-Asteroid Radar at Goldstone, Aug 1996- Jan 1997

S.J.Ostro, L. A. M. Benner, D. Choate, C. R. Franck, R. Frye, J.D. Giorgini, R.F. Jurgens, D. Kelley, R. Rose, K.D. Rosema, M. A. Slade, M.L. Thomas, R. Winkler, D. K. Yeomans (JPL/Caltech), R. S. Hudson (Wash. State Univ.)

We obtained echoes from five NEAs during this period. The following table presents our astrometric results. Each entry gives the time delay or Doppler frequency for echoes from the target's center of mass, received at the specified UTC epoch. The stated errors incorporate uncertainties in target dimensions. All observations used 8510-MHZ transmissions from 1) SS-14. Reception was at 1) SS-14 or DSS-13, as indicated. For cacti antenna, the reference point is the intersection of the elevation and azimuthal axes. Here 1 us corresponds to 150 m in range and 1 Hz corresponds to 1.76 cm/s in radial velocity.

Target	UTC Epoch	Type	Measurement	+/-	RCV
1991CS	1996/08/26 14:10:00	DOP	491118.2 Hz	5 Hz	14
1991CS	1996/08/27 13:30:00	DOP	299050.8 Hz	5 Hz	14
1991CS	1996/08/28 12:30:00	DOP	77608.1 Hz	5 Hz	14
1991CS	1996/08/29 12:40:00	DOP	-171558 .7 Hz	5 Hz	14
4197 (1982TA)	1996/10/23 07:10:00	DOP	488339 Hz	5 Hz	14
4197 (1982TA)	1996/10/23 11:10:00	DEL	89.601609 s	13 us	14
4197 (1982TA)	1996/10/24 06:50:00	DEL	86.425022 s	13 us	14
4197 (1982TA)	1996/10/24 08:30:00	DOP	275982 Hz	2 Hz	14
4197 (1982TA)	1996/10/24 10:20:00	DEL	86.017157 s	13 us	14
4197 (1982TA)	1996/10/28 17:00:00	DEL	94.450116 s	13 us	14
4179 Toutatis	1996/11/25 19:50:00	DEL	43.02114315 s	0.5 us	13
4179 Toutatis	1996/11/25 19:50:00	DOP	335217.79 Hz	0.1 Hz	13
4179 Toutatis	1996/11/26 18:00:00	DOP	283557.02 Hz	0.1 Hz	13
4179 Toutatis	1996/11/26 18:00:00	DEL	40.12841459 s	0.5 us	13
4179 Toutatis	1996/11/27 17:30:00	DEL	37.71556688 s	0.5 us	13
7341 (1991VK)	1997/01/10 18:20:00	DOP	3731.0 Hz	5 Hz	14
7341 (1991VK)	1997/01/11 19:10:00	DEL	75.008124 s	5 us	14
7482 (1994PC1)	1997/01/20 05:10:00	DEL	65.524897 s	4 us	14
7482 (1994PC1)	1997/01/23 04:50:00	DEL	69.2846055 s	10 us	13

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We obtained 100s from five NEAs during this period. The following table presents our astrometric results. Each entry gives the time delay or Doppler frequency for echoes from the target's center of mass, received at the specified UTC epoch. The stated errors incorporate uncertainties in target dimensions. All observations used 851 O-MHZ transmissions from DSS-14. Reception was at T) SS-14 or DSS-13, as indicated. For each antenna, the reference point is the intersection of the elevation and azimuthal axes. Here 1 us corresponds to 150 m in range and 1 Hz corresponds to 1.76 cm/sin radial velocity.

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