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POSITIONS AND ORBITS OF THREE MINOR PLANETS DISCOVERED AT THE ESO-LA SILLA IN 1989

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SUMMARY: During the first mission in 1989 at European South Observatory-La Silla,96 precise astrometric positions of three new discovered minor planets were obtained. with the Grand Prism Objective (GPO). On the basis of such positions the elliptic orbits are derived by Gauss-Encke method.

The present paper contains the results of the photographic observations of three new-discovered minor planets during the mission in February-March 1989 at La Silla Observatory.

Observations were performed with 40 cm GPO using Kodak spectroscopic plates 103a-O. All the plates were measured on the Optronics measuring machine, Garching and on the Ascorecord Zeiss, Uccle.

The results of observations and minor planets orbital elements are presented in three tables.

Amelioration of elliptic orbits, derived by Gauss-Encke method, was done using the method of two distance variation.

Table I E 4196 : Observations and residuals

DATE			RA(1950.0)			D(1950.0)			RESIDUALS IN RAIN D		
			h	*m*	*s*	°	′	″	*s*	″	″
1989	2	7.24962	10	9	8.007	+13	42	.46	.001	.02	.57
1989	2	7.25587	10	9	7.677	+13	42	.63	.018	.27	.66
1989	2	7.26212	10	9	7.336	+13	42	.97	.024	.36	.91
1989	2	8.26941	10	8	12.445	+13	42	13.80	−.046	−.67	−.46
1989	2	8.27496	10	8	12.138	+13	42	13.81	−.042	−.61	−.52
1989	2	8.28052	10	8	11.838	+13	42	13.95	−.031	−.45	−.45
1989	2	9.24858	10	7	18.797	+13	42	28.31	−.029	−.42	.23
1989	2	9.25413	10	7	18.520	+13	42	28.41	.007	.11	.26
1989	2	9.25969	10	7	18.208	+13	42	28.48	.008	.12	.26
1989	2	10.26524	10	6	22.670	+13	42	42.21	−.006	−.09	.02
1989	2	10.27080	10	6	22.361	+13	42	42.26	.000	.00	.00
1989	2	10.27635	10	6	22.057	+13	42	42.35	.011	.16	.02
1989	2	12.25170	10	4	32.147	+13	43	8.88	.035	.51	.41
1989	2	12.25656	10	4	31.882	+13	43	8.94	.048	.70	.41
1989	2	12.26142	10	4	31.587	+13	43	9.02	.032	.46	.44
1989	2	13.22462	10	3	37.652	+13	43	20.71	.009	.13	.33
1989	2	13.22948	10	3	37.377	+13	43	20.82	.014	.20	.38
1989	2	13.23434	10	3	37.108	+13	43	20.89	.024	.35	.39
1989	2	14.34615	10	2	34.512	+13	43	32.83	.050	.73	.06
1989	2	14.35101	10	2	34.212	+13	43	33.18	.028	.41	.37
1989	2	17.30865	9	59	47.461	+13	43	59.29	.000	.01	.20
1989	2	17.31351	9	59	47.194	+13	43	59.50	.013	.19	.39
1989	2	17.31837	9	59	46.902	+13	43	59.71	.000	.00	.59
1989	2	26.17045	9	51	34.273	+13	43	43.81	−.018	−.26	−.06
1989	2	26.17531	9	51	34.020	+13	43	43.81	.000	.00	.00
1989	2	26.18017	9	51	33.741	+13	43	43.79	−.009	−.12	.04
1989	2	27.23503	9	50	36.648	+13	43	28.99	−.011	−.16	−.65
1989	2	27.23990	9	50	36.398	+13	43	28.92	.006	.09	−.64
1989	2	27.24476	9	50	36.160	+13	43	28.64	.036	.52	−.83
1989	2	28.24753	9	49	42.480	+13	43	14.12	.046	.67	.89
1989	2	28.25240	9	49	42.214	+13	43	13.91	.045	.65	.78
1989	2	28.25726	9	49	41.961	+13	43	13.87	.056	.82	.83
1989	3	2.17462	9	48	00.923	+13	42	34.63	.004	.06	.63
1989	3	2.17948	9	48	00.668	+13	42	34.55	.009	.14	.66
1989	3	2.18434	9	48	00.438	+13	42	34.41	.039	.57	.64
1989	3	3.22861	9	47	06.234	+13	42	08.48	−.004	−.05	.79
1989	3	3.23399	9	47	05.956	+13	42	08.38	.002	.02	.84
1989	3	3.23937	9	47	05.675	+13	42	08.09	.004	.06	.71

3 AMELIORATION (S), x = .1445655 Y = .2657596 TO ADD AT DELTA 1, DELTA 3

EPOCH : 1989 February 3.0 ET

M_0	153.17278	
ω	17.80949	
Ω	330.02083	
i	21.35878	Equinoxe 1950.0
ϕ	15.07075	
μ	634.04967	
a	3.1520193	
g	12.0	

Table II E 4198 : Observations and residuals

DATE			RA(1950.0)			D(1950.0)			RESIDUALS		IN RAIN D
			h	*m*	*s*	°	′	″	*s*	″	″
1989	2	8.12740	9	22	9.566	+0	42	47.97	−.011	−.16	−.61
1989	2	8.13365	9	22	9.230	+0	42	48.87	.006	.09	−.72
1989	2	8.13990	9	22	8.893	+0	42	50.25	.021	.32	−.34
1989	2	9.08538	9	21	17.326	+0	45	26.63	−.008	−.13	−.27
1989	2	9.09094	9	21	17.023	+0	45	27.84	.000	.00	.00
1989	2	9.09649	9	21	16.724	+0	45	28.78	.013	.19	.00
1989	2	10.06038	9	20	24.246	+0	48	15.97	.025	.38	−.23
1989	2	10.06594	9	20	23.922	+0	48	16.90	.011	.16	−.29
1989	2	10.07149	9	20	23.619	+0	48	17.80	.018	.27	−.38
1989	2	11.05101	9	19	30.413	+0	51	16.17	.020	.30	−.20
1989	2	11.05587	9	19	30.154	+0	51	17.06	.031	.46	−.22
1989	2	11.06073	9	19	29.886	+0	51	18.10	.033	.49	−.08
1989	2	12.03781	9	18	36.991	+0	54	23.09	−.010	−.15	−.59
1989	2	12.04302	9	18	36.734	+0	54	24.09	.020	.30	−.60
1989	2	12.04823	9	18	36.437	+0	54	25.13	.010	.15	−.57
1989	2	13.06628	9	17	41.572	+0	57	46.42	−.040	−.60	−.51
1989	2	13.07115	9	17	41.308	+0	57	47.31	−.037	−.55	−.60
1989	2	13.07601	9	17	41.051	+0	57	48.27	−.026	−.38	−.62
1989	2	14.04198	9	16	49.481	+1	01	06.94	−.007	−.10	.01
1989	2	14.04684	9	16	49.186	+1	01	07.78	−.037	−.55	−.17
1989	2	26.01767	9	06	59.338	+1	49	30.65	.010	.14	−.21
1989	2	26.02253	9	06	59.108	+1	49	32.17	.000	.00	.00
1989	2	26.02740	9	06	58.890	+1	49	33.38	.003	.04	−.10
1989	2	27.01698	9	06	15.934	+1	54	00.72	.021	.32	.43
1989	2	27.02323	9	06	15.664	+1	54	02.15	.028	.42	.16
1989	2	27.02948	9	06	15.404	+1	54	03.84	.045	.68	.15
1989	2	28.02184	9	05	33.426	+1	58	32.93	.042	.62	−.84
1989	2	28.02670	9	05	33.215	+1	58	34.52	.040	.61	−.58
1989	2	28.03156	9	05	33.006	+1	58	35.50	.041	.62	−.94
1989	3	2.02045	9	04	12.332	+2	07	43.58	−.043	−.64	−.38
1989	3	2.02531	9	04	12.132	+2	07	45.19	−.045	−.67	−.12
1989	3	2.03017	9	04	11.935	+2	07	46.22	−.043	−.65	−.44

3 AMELIORATION(S) X= .0619140 Y= .3084847 TO ADD AT DELTA 1, DELTA3

Epoch: 1989 2 3.0 ET

M_0	58.75446	
ω	178.25909	
Ω	253.69403	Eqinoxe 1950.0
i	9.46828	
ϕ	5.29651	
μ	787.50716	
a	2.7279393	
g	13.9	

Table III E 4199 : Observations and residuals

DATE			RA(1950.0)			D(1950.0)			RESIDUALS	IN RAIN D	
			h	*m*	*s*	°	′	″	*s*	″	″
1989	2	7.20240	9	23	18.627	+13	48	39.26	−.029	−.42	.03
1989	2	7.20865	9	23	18.238	+13	48	40.57	.000	.00	.00
1989	2	7.21490	9	23	17.827	+13	48	41.75	.007	.10	−.16
1989	2	9.14094	9	21	13.809	+13	55	35.80	−.014	−.20	.47
1989	2	9.14649	9	21	13.447	+13	55	37.23	−.003	−.05	.68
1989	2	9.15205	9	21	13.102	+13	55	38.53	.024	.35	.77
1989	2	10.12010	9	20	10.613	+13	59	05.58	.000	.00	−.20
1989	2	10.12566	9	20	10.257	+13	59	06.93	.016	.23	−.07
1989	2	10.13052	9	20	09.943	+13	59	08.32	.027	.40	.26
1989	2	12.08226	9	18	04.087	+14	06	06.73	−.040	−.59	.56
1989	2	12.08712	9	18	03.779	+14	06	07.73	−.026	−.37	.50
1989	2	12.09198	9	18	03.473	+14	06	08.89	−.009	−.13	.59
1989	2	13.12462	9	16	57.074	+14	09	48.33	−.024	−.35	.03
1989	2	13.12948	9	16	56.775	+14	09	49.35	.000	.00	.00
1989	2	13.13434	9	16	56.474	+14	09	50.10	.022	.32	−.30
1989	2	25.02253	9	05	01.955	+14	48	40.36	.081	1.17	1.32
1989	2	25.02740	9	05	01.660	+14	48	41.06	.059	.85	1.15
1989	2	25.03226	9	05	01.364	+14	48	42.04	.036	.52	1.26
1989	2	26.05101	9	04	06.747	+14	51	35.67	.062	.90	1.22
1989	2	26.05587	9	04	06.487	+14	51	36.80	.070	1.01	1.51
1989	2	26.06073	9	04	06.244	+14	51	37.64	.095	1.37	1.51
1989	3	1.06628	9	01	33.543	+14	59	37.94	.009	.14	1.41
1989	3	1.07115	9	01	33.297	+14	59	38.63	.011	.16	1.35
1989	3	1.07601	9	01	33.047	+14	59	39.32	.008	.12	1.28
1989	3	3.03990	9	00	00.832	+15	04	25.94	−.038	−.55	1.64
1989	3	3.04476	9	00	00.577	+15	04	26.70	−.062	−.90	1.70

3 AMELIORATION(S), X= .1568874 Y= .7112159 TO ADD AT DELTA 1, DELTA 3.

M_0	=	−70.54899	
ω	=	282.73328	
Ω	=	300.59456	Equinoxe 1950.0
i	=	2.64125	
ϕ	=	7.89946	
μ	=	990.85082	
a	=	2.340627	
g	=	14.6	

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ПОЛОЖАЈИ И ОРБИТЕ ТРИ МАЛЕ ПЛАНЕТЕ ОТКРИВЕНЕ СА ESO – LA SILLA 1989. ГОДИНЕ

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Стручни чланак

У току прве мисије 1989. године на Европској јужној опсерваторији у La Silla–и (Чиле), H. Debehogne је открио три нове мале планете: E 4196, E 4198 и E 4199. У раду су дати њихови прецизни положаји и орбитални елементи изведени методом Gauss-Encke.