

PROGRESS REPORT ON "UTTAC"

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1. Short history:

Pelletron 12 UD:

Sales contract with Hakuto Co., Ltd. on November 22, 1973.
 Separately packed parts arrived at Yokohama in July 1975.
 Assembling completed by the end of January 1976.
 The first analyzed beam obtained on February 26, 1976.
 Acceptance test completed on July 7, 1976, followings performed:
 Protons 24 MeV Analyzed beam 3 μ A,
 O (7+) 88 MeV 0.1 μ A,
 Cl(8+) 99 MeV 0.12 μ A.

ESP-90 spectrograph:

Sales contract with Benifuji Co., Ltd. on October 20, 1973.
 All parts arrived at Tsukuba by the beginning of August 1975.
 Installation and test operation completed by November 1975.

Lamb-shift polarized ion source with spin filter:

Design started in April 1973.
 The first accelerated beam obtained in November 1976.

Large general-purpose scattering chamber:

Design started in April 1974.
 Installation completed in January 1976.

Computer system:

Installation completed in June 1976.
 Data acquisition system available by May 1977.

Building:

Construction of rooms for equipments started in June 1974 and completed by June 1975. Laboratories under construction.

2. Machine time: totally 10 months in the period from November 1976 to February 1978 (16 months).

3. Beam characters actually used in some experiments (not necessarily best ones):

	p	d	O	α	\bar{p}	\bar{d}
Terminal voltage (MV)	11.0	6.0	11.2	11.2	10.5	10.5
Charging current (μ A)	99	69	102	78	69	95
Lost current (μ A)	6	0	11	9	0	7
Transmission (%)	67	95	50	50	50	63
Analyzed current (nA)	320	100	150	100	10	100
Degree of polarization (%)			(6+)	(7+)		85

4. Research works which have been done and/or are in progress:

Nuclear physics: "D+p, D+d breakup", "N(d,d') and (p,p')",
 " $\sigma(\theta)$ and A(θ) in nucleon transfer reactions",
 "C+O reactions, excitation curves, angular distributions,
 angular correlation and so on", "high spin states in Te 177".

Atomic physics: inner shell excitation.

Solid-state physics: "magnetic field at the nucleus",
 "structure of crystal".

Analysis of element: chemical, biological, geological and medical materials.