ACCELERATOR MODELING:
ITS USE IN BEAM DYNAMICS EXPERIMENTS AT LAMPF[a]

R.A. Jameson and W.E. Jule
Los Alamos Scientific Laboratory
of the University of California, Los Alamos, NM 87545, USA.

The basic computer model for Alvarez linacs used at
LAMPF is PARMILA.  In its original state, this code was used
to study perfect linacs or those with random errors in
quantities which affected beam dynamics.  In the past several
years, we have been attempting to make the PARMILA model con-
form to the real LAMPF accelerator.  To this end we have
incorporated as many of the actual measured physical parameters
as possible into the code, and have found it necessary to
include a more comprehensive treatment of the beam dynamics.
For example, it is necessary to treat longitudinal and
transverse phase-space simultaneously in the calculations.
The motivation is, of course, to give us a more powerful
computational tool with which to understand the detailed per-
formance of the LAMPF accelerator, and ultimately to optimize
the tuning.  Specific beam dynamics experiments have been
done which indicate the validity of the model.