

LINAC Beam Information

The full LINAC booster has become operational since 2007. An estimate of available beam energies, based on measured average $E_{\text{gain}} \sim 8.6 \text{ MeV/q}$ in the previous operations is given below:

Pelletron Terminal voltage =12 MV

Z	A	Q_s	β_{pell}	$E_{\text{pell}}(\text{MeV})$	Q_{s2}	$E_{\text{linac}}(\text{MeV})$
8	16	6	0.106	84	8	150
9	19	6	0.097	84	8	150
14	28,30	8	0.091	108	12	210
16	32,34	8	0.085	108	14	230
17	35	9	0.086	120	15	250

Pelletron Terminal voltage =11 MV

Z	A	Q_s	β_{pell}	$E_{\text{pell}}(\text{MeV})$	Q_{s2}	$E_{\text{linac}}(\text{MeV})$
8	16	7	0.109	88	8	150
9	19	7	0.0997	88	8	150
14	28,30	8	0.087	99	12	200
16	32,34	8	0.0815	99	14	220
17	35	9	0.082	110	15	240

Q_s : Most probable charge state at terminal foil stripper

E_{pell} (β_{pell}): Energy (velocity) at Pelletron exit

Q_{s2} : Most probable charge state after post tandem foil stripper

- For lower Pelletron terminal voltage ($< 12 \text{ MV}$), velocity matching into LINAC will be very poor resulting in significantly lower energy gain than indicated in the above table.
- Taking into account the loss of beam due to bunching and by the post tandem foil stripper, expected beam intensity on the target will be 1-5 pnA (assuming 500 enA injection into the Pelletron).

For more information contact pellinac@gmail.com