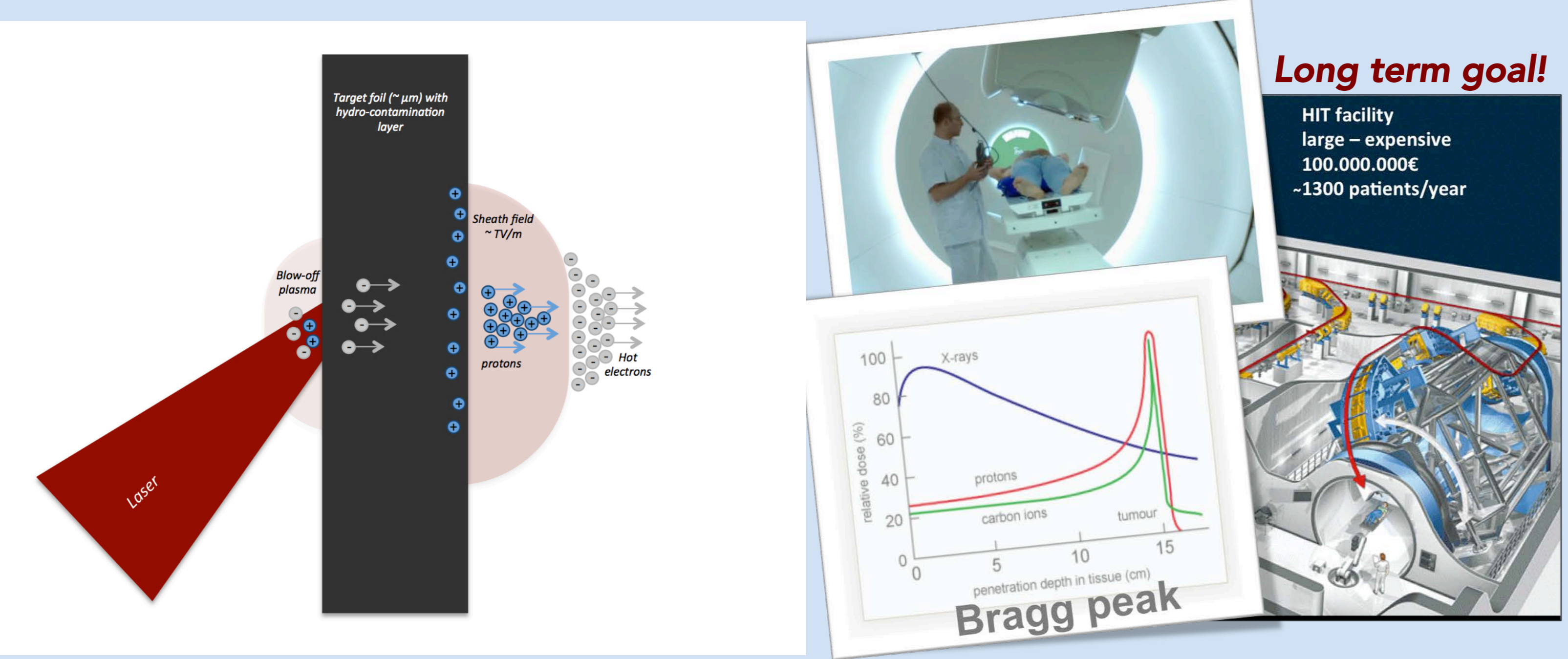
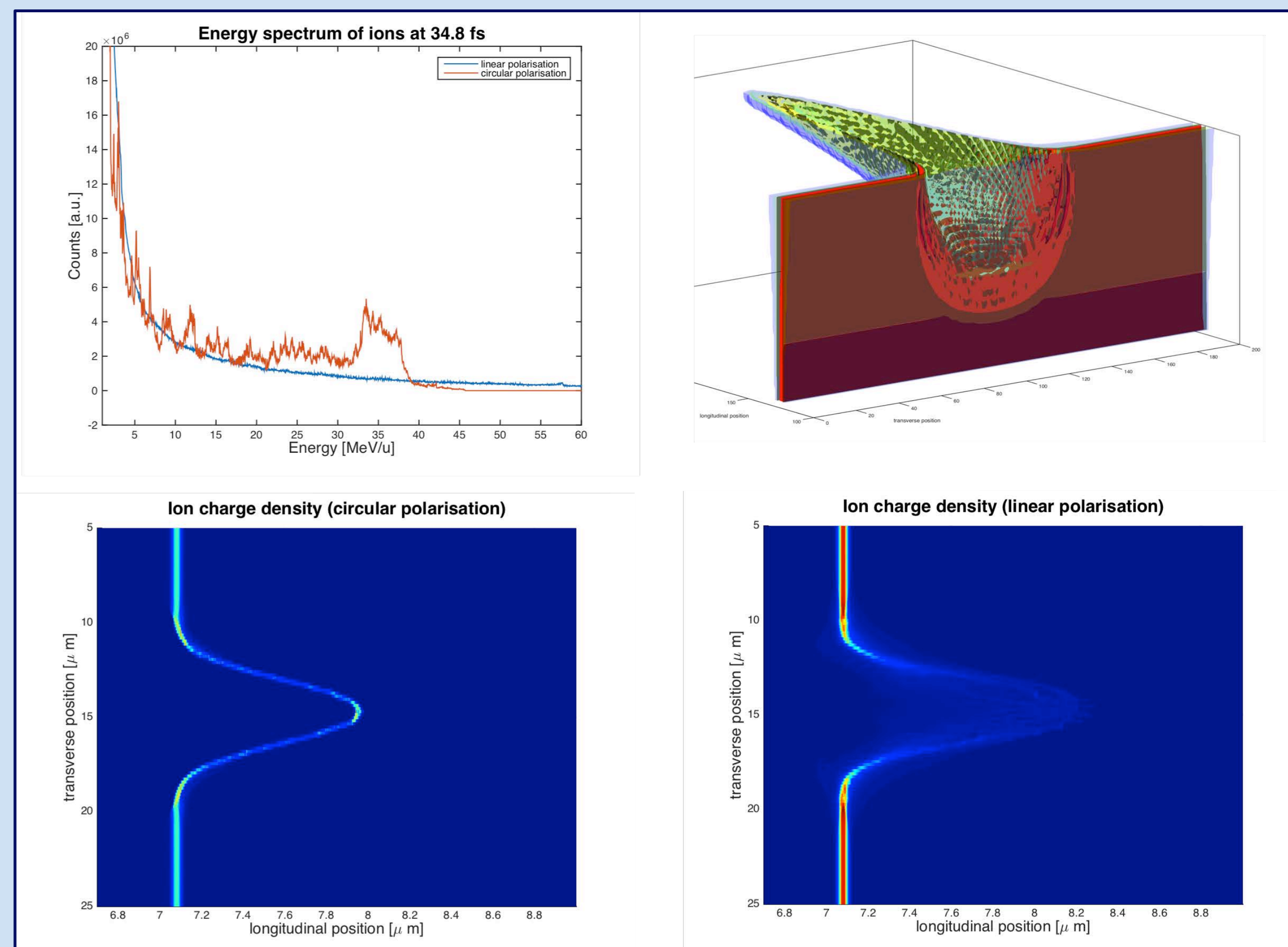




Ion acceleration and cancer therapy



Simulations



Why laser-driven ion acceleration?

- smaller, cheaper
- huge electric field over short distance. 1000 x

Challenges

- no mono-energetic beams
- low flux
- low cut-off energies...

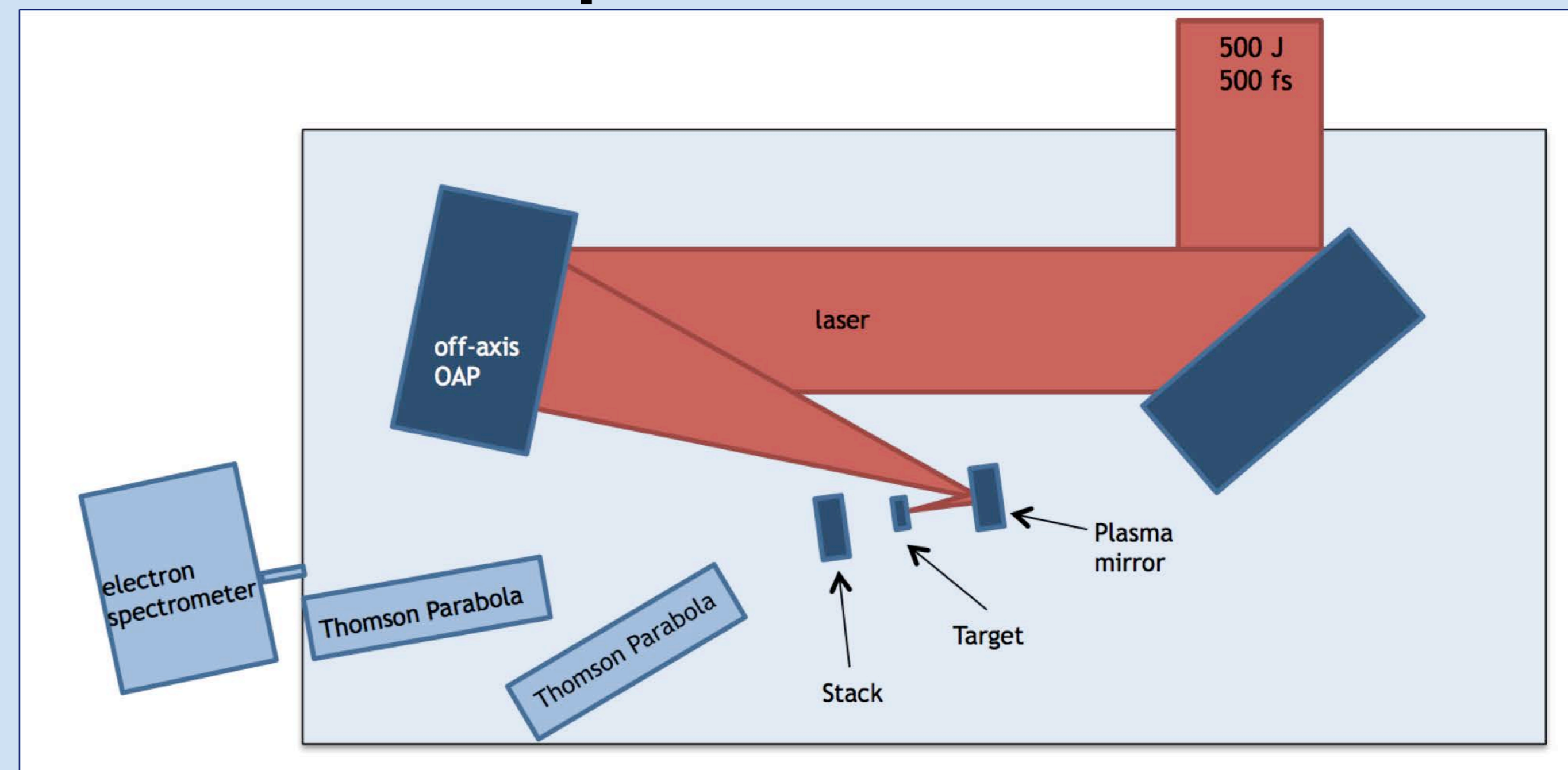
Many other promising acceleration mechanisms, like...

- Radiation Pressure Acceleration
- Breakout Afterburner

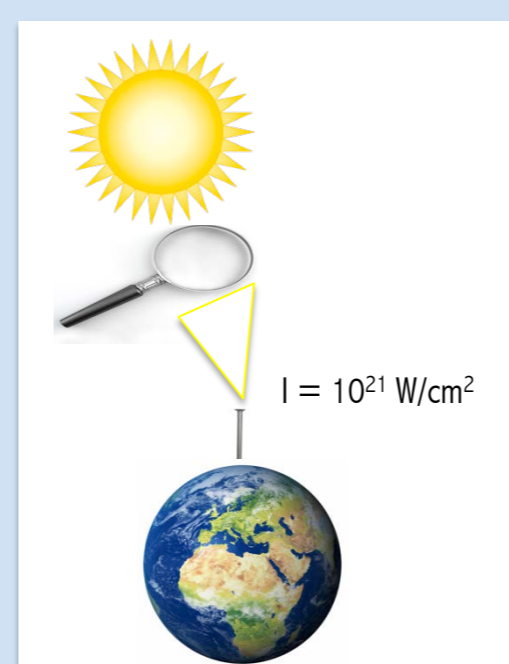
Target Normal Sheath Acceleration

Laser absorption generates high temperature electrons
Electrons propagate through target and set up electric field of order TV/m at the rear side
Ionisation and acceleration of protons by this electric field

Experiments



Collaborations



	VULCAN	ASTRA-Gemini
Power	1 PW	0.5 PW
Energy	>500 J	30 J
Wavelength	1.05 μm	800 nm
Pulse duration	500 fs	35 fs
Intensity	up to 10 ²¹ Wcm ⁻²	up to 10 ²¹ W cm ⁻²
Repetition	10 shots per day	3 shots per minute

Conferences/Workshops/Outreach

