

The background features a large, abstract graphic composed of several overlapping, semi-transparent blue circles and arcs. The colors range from a deep, dark blue to a light, almost white blue. The circles are positioned on the left side of the frame, with some overlapping each other, creating a sense of depth and movement. The right side of the frame is mostly white, providing a clean contrast for the blue elements.

CAS Case Study

Your Design Task

Make a green field accelerator design!

- **Top level parameters given (each group will focus one of six different parameter sets).**
- **Choose beam energy, beam current, RF frequency(ies) and power sources, type of accelerator structure, RF gradients and transition energies, NC or SC, linac vs ring, power source(s), type of lattice(s), etc**
- **Chose your favorite green field**

Make a presentation at the end of the course.

- **Imagine you are selling your design to the funding agency.**

1 – Short pulse neutron source

Pulse length:	~1 μs
Repetition rate:	50-60Hz
Average beam power:	~1.5 MW
Beam energy:	1-8 GeV
Particle type:	p or H-

2 – Long pulse neutron source

Pulse length:	2-3 ms
Repetition rate:	10-20 Hz
Average beam power:	~5 MW
Beam energy:	1-8 GeV
Particle type:	p or H-

3 – CW Neutron Source

Pulse length:	CW
Average beam power:	~1.5 MW
Beam energy:	0.5 - 4 GeV
Particle type:	p or H-

4 – ADS

Pulse length:	CW
Average beam power:	10 MW
Beam energy:	1-2 GeV
Particle type:	p or H-

Very low trip rate?



5 – Neutrino Source

Pulse length: 5 bunches of 3ns each

Repetition rate: 50-60Hz

Average beam power: ~4 MW

Beam energy: 2-8 GeV

Particle type: p or H-

6 – Radioactive Ion Beams

Pulse length:	CW
Average beam power:	~0.5 MW (for p)
Beam energy:	0.4 - 1 GeV/u (for p)
Particle type;	p to U

A suggested way to start

- **Study similar facilities**
 - **Understand the reasoning behind design choices**
 - **Were any choices site-specific, political, and/or historical?**
 - **Consider alternatives**
 - **Be creative (but be prepared to defend your choices)**
- **Make use of the lectures (and lecturers)**
 - **Take the opportunity to ask questions**