

On going actions

- **S2E finalization for :**
 - **30 +200 pC at 1-1.2 GeV**
 - **basic (now at HE TL)**
 - **w X-band at Gun exit**
 - **w ramps at plasma in-out**
 - **LE&HE virtual diagnostics**
 - **50 +230 pC at 1-1.2 GeV**
 - **basic (now at Linac exit)**
 - **w X-band at Gun exit**
 - **w ramps at plasma in-out**
 - **LE&HE virtual diagnostics**
- **X-band at @Gun finalization**
 - **200-300-500 pC beam**

Outcome closed actions & Decisions

- ❑ **Photoinjector actual layout:**
 - (3m + 3x2m) S-band
 - X-band structure=9 cells
 - > space after Gun allocated
 - Phase Locker space allocated

To Do

- ❑ **Finalize plasma focusing w ramps**
- ❑ **Cluster evolution of Power9 setup ~ 57 k€ ⇒ 3D PIC (AlaDyn)**
- ❑ **Finalize 2nd transfer line to ARIA undulator**
- ❑ **Finalize spectrometers & dumpers**
- ❑ **50+500 pC plasma WoP**

Upcoming milestones

Reasonable milestones:

- **November 2022** end: S2E completion (30-50 pC Witness at 1.-1.2 GeV w preliminary stability considerations)
- **May 2023:** Stability&jitter sensitivity studies plus virtual measurements: critical both for people and computing resources availability (RFD specs input)
- **June 2023:** Laser heater parameters w mbi studies for all RF beam: critical for people resources availability

Potential risks

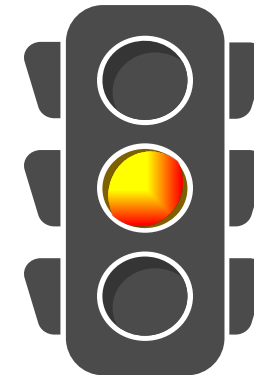
Right now:

- WP1 = 0.6+0.9 FTE (average with SPARC – ELI_NP-INFN-MI activities)
- WP2 = 0.7 FTE (average with SPARC activities -> 0.5 w SPARC restart)
- WP3 = 0.6 (average w SPARC-INFN-MI activities)
- TOT=2.8 FTE
- **Risks: slow recruitment and/or further lack of personnel**
- **No cluster upgrade for Power9**

Good news:

2 PhD students, maybe 1 people from TS, Shpakov partial relief from SPARC operation responsibility.

General Status



Business re-adapted
But some issues might
become critical

S2E status & Tasks

Oct 3rd 2022

work flow chart



#	WoP	Q (pC)	I@und (kA)	E (GeV)	Cap. length (cm)	X-band @Gun exit	S2E status	done	Priority	Task (in sequence)	People
1	Comb	30+200	1.9	1.0	50	NO	Out from plasma	NO	1	1. HE TL 2. Undulator	1. Conti 2. Petrillo, Nguyen Opromolla
2	Comb	30+200	1.9	1.2	50	NO	Out from plasma	NO	1	1. Linac 0.6 GeV 2. Plasma 3. HE TL 4. Undulator	1. Giribono 2. Romeo 3. Conti 4. Petrillo, Nguyen Opromolla
3	Comb	50 +230	1.9	1	50	NO	Out from Linac	NO	2	1. Plasma 2. HE TL 3. Undulator	1. Romeo 2. Conti 3. Petrillo, Nguyen Opromolla
4	Comb	50+230	1.9	1	50	NO	Out from Linac	NO	2	1. Linac 0.6 GeV 2. Plasma 3. HE TL 4. Undulator	1. Giribono 2. Romeo 3. Conti 4. Petrillo, Nguyen Opromolla



#	WoP	Q (pC)	I@und (kA)	E (GeV)	Cap. length (cm)	X-band @Gun exit	S2E status	done	Priority	Task (in sequence)	People
5	SB	200	1.5 (σ_z $\approx 100\mu\text{m}$ @ph.inj exit)	1.0		NO		NO	1	1. Pinj update 2. Linac 3. HE TL 4. Undulator	1. Bacci, Giribono 2. Giribono, Vaccarezza 3. Giribono, Conti 4. Petrillo, Nguyen Opromolla
7	Comb	30+200	1.9	1	50	YES	Out from PhInj	1. 90% 2.-5. NO	1 3	1. X-band R&D 2. Pinj update 3. Linac 4. Plasma 5. HE TL 6. Undulator	1. Bacci, Faillace 2. Bacci, Giribono 3. Giribono 4. Romeo 5. Conti 6. Petrillo, Nguyen Opromolla
8	SB	200-300- 400-500	1.5 (σ_z $\approx 100\mu\text{m}$ @ph.inj exit)	1		YES	Out from PhInj	1. NO 2.-5. NO	1 3	1. X-band R&D 2. Pinj update 3. Linac 4. HE TL 5. Undulator	1. Bacci, Faillace 2. Bacci, Giribono 3. Giribono, Vaccare zza 4. Giribono, Conti 5. Petrillo, Nguyen Opromolla



#	WoP	Q (pC)	I@und (kA)	E (GeV)	Cap. length (cm)	X-band @Gun exit	S2E status	done	Priority	Task (in sequence)	People
9	Comb	30+200	1.9	1	50	NO		NO	1	1. LE Diagnostics	1. Shpakov
10	Comb	30+200	1.9	1	50	NO		NO	1	1. HE Diagnostics	1. Shpakov
11	Comb	30+200	1.9	1.0	50 + ramps	NO	Out from Linac		2	1. Final focusing 2. Plasma 3. HE TL 4. Undulator	1. Giribono 2. Romeo 3. Conti 4. Petrillo, Nguyen Opromolla
12	Comb	30+200	1.9	1.2	50 + ramps	NO	Out from PhInj	NO	2	1. Linac 0.6 GeV + Fin.Foc. 2. Plasma 3. HE TL 4. Undulator	1. Giribono 2. Romeo 3. Conti 4. Petrillo, Nguyen Opromolla
13	Comb	50+500	1.9		50	NO		NO	3	1. Plasma simulations	1. Rossi Romeo
14	Aria TL	Comb & SB		1		NO		NO	1	1. HE TL	1. Vaccarezza