

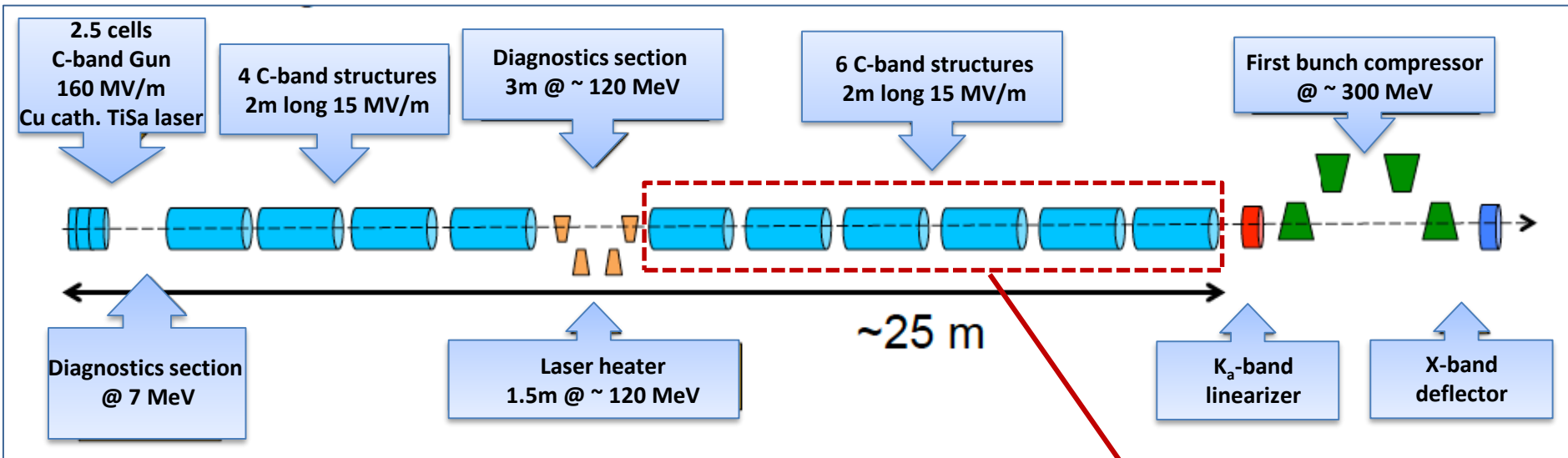


# XLS Injector meeting

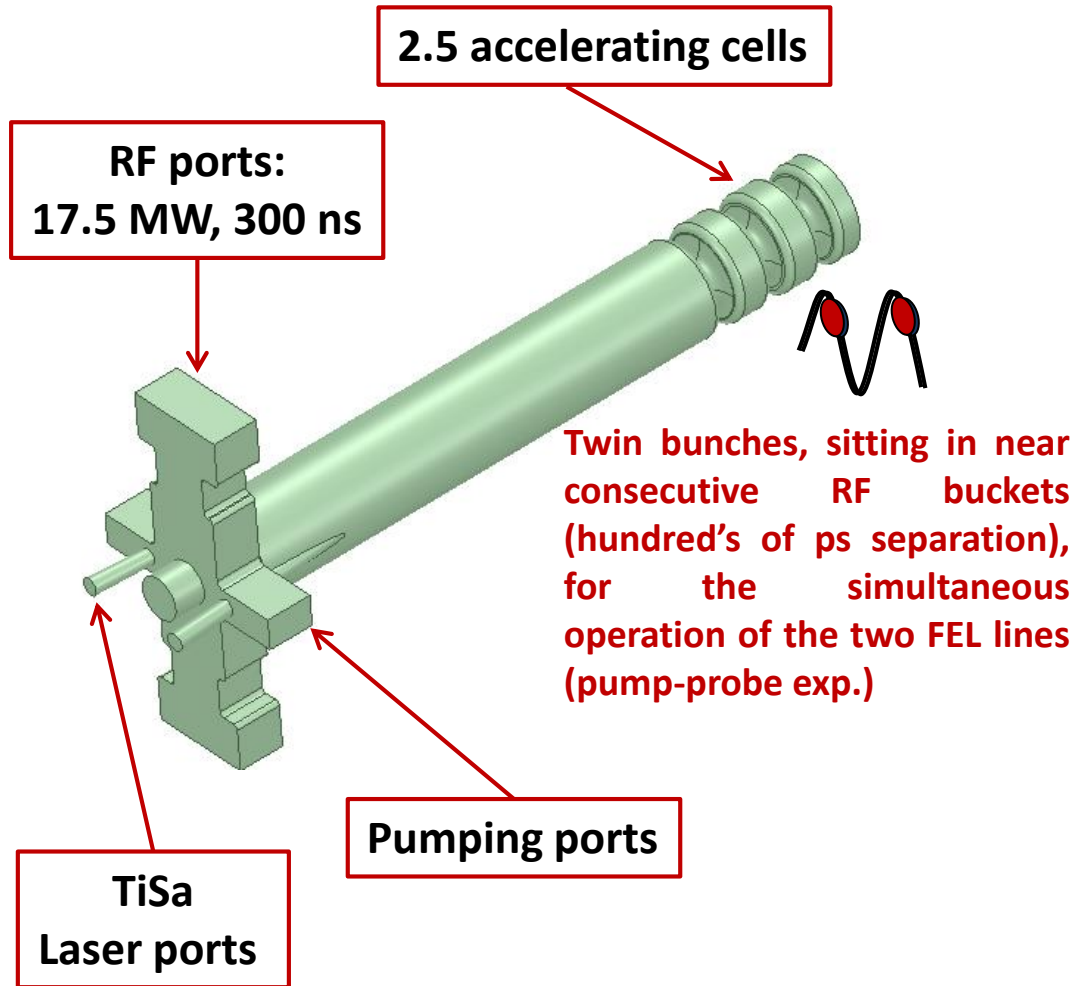
02-10-2020



Same injector for **High** and **Low** repetition rate operations (1 KHz and 100 Hz)



Possible replacement of the last 6 C-band structures with 4 X-band structures @30 MV/m for the 1 KHz operation (evaluation ongoing)



$E_{cath}$	160 MV/m
$\Delta f_{\pi/2-\pi}$	$\approx 52$ MHz
$Q_0$	11600
$\beta$	3
Filling time ( $\tau_F$ )	160 ns
$P_{diss} @ 160\text{MV/m}$	9.7 MW
$E_{CAT} / \sqrt{P_{diss}}$	51.4 [MV/m/(MW) <sup>0.5</sup> ]
Rep. Rate	1000 Hz
Peak Input power $P_{IN}$	17.5 MW
Pulsed heating ( $T_{puls}$ )	<20 °C
RF pulse length ( $T_{RF}$ )	300 ns
Av diss power ( $P_{av}$ )	2300 W

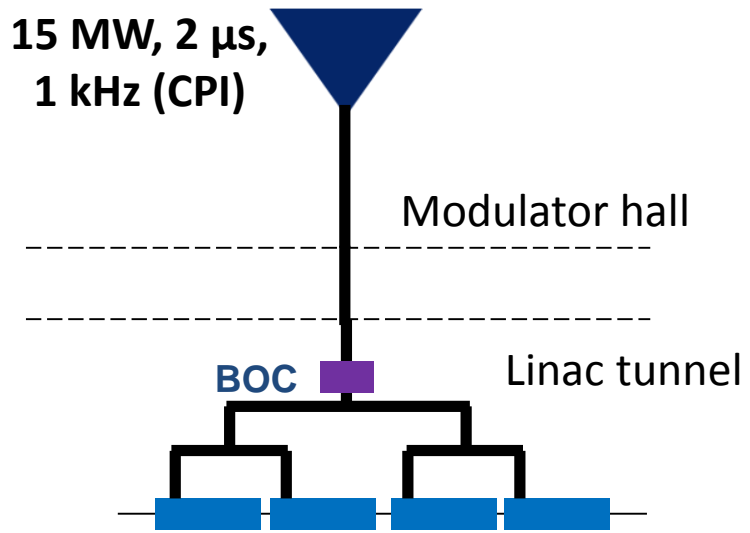


## RF System

Operating frequency [GHz]	5.996
Klystron pulse length [ $\mu$ s]	2
Klystron peak power [MW]	15
Pulse rate [pps]	1000
Q0 of BOC	216000
Qe of BOC	19100

## Acc. Structure

Phase advance	$2\pi/3$
Cell length [mm]	16.667
Number of cells	120
Total length [m]	2
Average iris radius [mm]	6.6
Tapering angle [deg]	0.02
Iris radius (first - last) [mm]	6.943 – 6.257
Shunt imp. [ $M\Omega/m$ ]	71 - 77
Q	9986 - 9943
Group velocity/c [%]	2.4 – 1.6
Filling time [ns]	336
Repetition rate [Hz]	1000
Avg. acc. gradient [MV/m]	15
Kly. Power per module [MW]	9



Courtesy M. Diomede