

LINAC4 WORK BREAKDOWN STRUCTURE (WBS)

Code	Label	TASK
LINAC4- 1	Project Management	
LINAC4- 1.1	Project Management	
LINAC4- 1.2	Planning Installation and safety coordination	
LINAC4- 1.3	External collaborations coordination	
LINAC4- 1.4	Linac Beam Performance coordination	
LINAC4- 1.5	Accelerating section coordination	
LINAC4- 1.6	System integration coordination	
LINAC4- 1.7	PSB commissioning coordination	
LINAC4- 1.8	PSB Beam Performance coordination	
LINAC4- 1.9	Technical coordination, Quality assurance	
LINAC4- 2	Linac Systems Engineering and Supply	
LINAC4- 2.1	Ion Source and LEBT	<i>Ion source procurement LEBT procurement Source&LEBT optimisation</i>
LINAC4- 2.2	Radio Frequency Quadrupole	
LINAC4- 2.2.1	<i>Functional design, commissioning</i>	<i>RFQ functional design RFQ commissioning</i>
LINAC4- 2.2.2	<i>Mech. design, fabrication, assembling</i>	<i>RFQ design RFQ machining, assembly</i>
LINAC4- 2.3	Chopper line	<i>Line assembling Line testing with beam</i>
LINAC4- 2.4	Accelerating Structures	<i>Material procurement Tuners procurement RF windows procurements DTL prototyping and design DTL production CCDTL design CCDTL production PIMS prototyping and design PIMS production Debuncher design Debuncher production</i>

LINAC4- 2.5	Linac Beam dynamics	<i>Linac beam dynamics analysis PMQ procurement</i>
LINAC4- 2.6 <i>LINAC4- 2.6.1</i>	Radio Frequency Systems <i>Low-level RF</i>	<i>Design LLRF components Procure LLRF components Install LLRF modules</i>
<i>LINAC4- 2.6.2</i>	<i>High-power RF system</i>	<i>Klystron prototyping Klystron testing Klystron delivery and installation Waveguides procurement Waveguides installation Klystron ancillaries procurement Klystron interlocks procurement</i>
<i>LINAC4- 2.6.3</i> <i>LINAC4- 2.6.4</i>	<i>Slow tunings and interlocks Tube amplifiers</i>	<i>Specify tube amplifiers Tube amplifiers procurement</i>
LINAC4- 2.7	Beam Instrumentation	<i>Beam Transformers procurement BPM procurement Emittance meas. Procurement Temporary meas. Line Modification LBE-LBS lines</i>
LINAC4- 2.8	Transfer line	<i>Transfer line design Transfer line comp. procurement</i>
<i>LINAC4- 2.8.1</i>	<i>Beam dump</i>	<i>Beam dump design Beam dump procurement</i>
LINAC4- 2.9 <i>LINAC4- 2.9.1</i>	Magnets <i>Magnets</i>	<i>Quadrupole design Quadrupole procurement Dipole design and procurement Steerers design and procurement</i>
<i>LINAC4- 2.9.2</i>	<i>Magnetic measurements</i>	<i>PMQ measurement EM quadrupoles measurement</i>
LINAC4- 2.10	Power Converters	<i>Modulator prototyping Modulator procurement Quad supplies procurement Dipole supplies procurement Steerer supplies procurement</i>

LINAC4- 2.11	Vacuum systems	<i>Vacuum system design Vacuum components procurements Vacuum testing of linac elements Vacuum installation and cabling</i>
LINAC4- 2.12	Control systems	<i>Control system definition Control equipment procurement Control system installation and test</i>
LINAC4- 3	PS Booster systems	
LINAC4- 3.1	Booster injection modifications	<i>Injection region design Stripper design Stripper procurement Distributor modifications Magn. Elements modifications</i>
LINAC4- 3.2	PSB Beam dynamics	<i>Beam dynamics simulations Preparation MDs on PSB</i>
LINAC4- 4	Installation and commissioning	
LINAC4- 4.1	Test stand operation	<i>Tests at 3 MeV Tests at 10 MeV Conditioning at SM18</i>
LINAC4- 4.2	Transport and installation	<i>Transport, installation of elements</i>
LINAC4- 4.3	Survey	<i>Internal alignment of linac elements Alignment of linac girders</i>
LINAC4- 4.4	Linac beam commissioning	<i>Definition of commissioning strategy Commissioning measurements</i>
LINAC4- 4.5	PSB commissioning to nominal LHC perf.	<i>Definition of commissioning strategy Commissioning measurements</i>
LINAC4- 4.6	PSB commissioning to ultimate performance	<i>Definition of commissioning strategy Commissioning measurements</i>
LINAC4- 5	Building and infrastructure	
LINAC4- 5.1	Building design and construction	<i>Preparation of CE contracts Building construction</i>
LINAC4- 5.2	Cooling and ventilation design, installation	<i>Definition of CV system Procurement of CV elements Installation of CV elements</i>
LINAC4- 5.3	Electricity and cabling installation	<i>Definition of EL elements</i>

LINAC4- 5.4

Access system design, installation

Procurement of EL elements
Installation of EL elements
Design and procurement
Installation of access system