

System Design for the FAIR Proton LINAC BPMs — •PETER FORCK¹, MOHAMMED ALMALKI¹, GIANLUIGI CLEMENTE¹, LARS GROENING¹, WOLFGANG KAUFMANN¹, PIOTR KOWINA¹, CLAIRE SIMON², and WOLFGANG ACKERMANN³ — ¹GSI — ²CEA/ Saclay, IRFU — ³TU Darmstadt, TEMF

The planned Proton LINAC at the FAIR facility will provide a beam current of 70 mA accelerated to 70 MeV by novel CH-type DTLs. Four-fold button Beam Position Monitor (BPM) will be installed at 14 locations along the LINAC. The specification for position measurement is 0.1 mm spatial resolution and for time-of-flight beam velocity determination the accuracy must be 8.5 ps corresponding to 1 degree with respect to the 325 MHz acceleration frequency. Finite element and finite integration technique calculations by CST Particle Studio for non-relativistic velocities were performed to determine the signal characteristic in time- and frequency domain. Most of these BPMs are mounted only about 40 mm upstream of the CH cavities and the BPM signal strength caused by the cavity residual rf-power was estimated. The technical layout of the BPM system is discussed.