

Digital Beam Position and Phase Monitor for P-LINAC for FAIR — •MOHAMMED ALMALKI¹, P. FORCK¹, W. KAUFMANN¹, P. KOWINA¹, R. SINGH¹, C. KRÜGER¹, B. BARICEVIC², M. ZNIDARCIC², and R. HROVATIN² — ¹GSI — ²I-tech,

For the planned P-LINAC for the FAIR facility, Beam Position Monitors (BPM) will be installed at 14 locations along the LINAC. The digital signal processing to derive the transverse beam position and the beam phase will be implemented by "Libera Single Pass H". The specification for position measurement is 0.1 mm spatial resolution and phase accuracy is 1 degree with respect to 325 MHz acceleration frequency. The results from the Libera digital signal processing were compared with the time-domain approach and the FFT analytic calculations. The first test was performed at the GSI UNILAC with a Ne⁴⁺ beam at 1.4 MeV / u with a beam current of ~ 80 *A. A single BPM was used to act as a "Bunch arrival monitor" to characterize the dependence of beam arrival time on bunch shape. The signals were sampled at 117.440 MHz with a 16-bit ADC to produce I and Q data streams. The first experimental results will be reported.