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Particle Physics and Instrumentation - Physics and Technology

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The impact of experimental science is defined by the capabilities of its instruments. Particle Physics, reaching to increasingly small scales, depends on advances both in accelerator and detector technology to explore high energies and rare processes. The importance of Instrumentation to the Particle Physics program has been recognized by the creation of an “Instrumentation Frontier” within the 2013 DPF “Snowmass” planning process. We give examples of how physics needs have guided development of technologies for the Energy and Intensity Frontiers. We describe how current technology has limited our reach and what new technologies may be on the horizon. We will also discuss the status of the Instrumentation Frontier work in preparation for the Community Summer Study this summer in Minneapolis.