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**Development of a Transparent Profiler Based on Secondary
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Abstract The PEPITES project* aims at realizing an operational prototype of an ultra-thin, radiation-resistant profiler able to permanently operate on mid-energy (O(100 MeV)) charged particle accelerators. PEPITES uses secondary electron emission (SEE) for the signal because it requires only a minimal thickness of material (10 nm); very linear, it also offers a great dynamic. The lateral beam profile is sampled using segmented electrodes, constructed by thin film methods. Gold strips, as thin as the electrical conductivity allows (~ 50 nm), are deposited on an as thin as possible insulating substrate. When crossing the gold, the beam ejects the electrons by SEE, the current thus formed in each strip allows the sampling. The technique was validated at ARRONAX with 68 MeV proton beams for intensities from 100 fA to 10 nA. SEE is characterized up to 100 nA at ARRONAX and medical energies at CPO**. Electrodes were subjected to doses of up to 10^9 Gy without showing significant degradation. A demonstrator with dedicated electronics (CEA) will be installed at ARRONAX and used routinely. The performances of the system and its behavior over time will thus be characterized.

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Footnote *LLR, ARRONAX cyclotron and CEA

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