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The electron accelerator for the AWAKE experiment at CERN

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The AWAKE collaboration prepares a proton driven plasma wake field acceleration experiment using the SPS beam at CERN. A long proton bunch extracted from the SPS interacts with a high power laser and a 10 m long rubidium vapour plasma cell to create strong wake fields allowing sustained electron acceleration. The electron bunch to probe these wake fields get produced by a 20 MeV electron accelerator. The electron accelerator consists of an rfgun and a short booster structure. This electron source should provide beams with intensities between 0.1 to 1 nC, bunch length's between 0.3 and 3 ps and an emittance of the order of 2 mm mrad. The wide range of parameters should cope with the uncertainties and future prospects of the planned experiments. The layout of the electron accelerator and beam dynamics simulations are presented.

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