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An estimate of the spectral intensity expected from the molecular Bremsstrahlung radiation in extensive air showers

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A detection technique of Ultra High Energy Cosmic Rays (UHECR) complementary to fluorescence and Radio techniques would be the use of the Molecular Bremsstrahlung Radiation (MBR) emitted by low energy electrons left after the passage of the showers in the atmosphere.

The emission mechanism is expected from quasi-elastic collisions of electrons produced in the shower by the ionization of molecules in the atmosphere.

In this contribution, we calculate the spectral intensity of photons at ground level originating from the transition between unquantized energy states of free ionization electrons.

In the absence of absorption of the emitted photons in the plasma, we obtain a spectral intensity depending on the effective lifetime of the ionization electrons and compare it to the spectral intensity measurements provided by the SLAC experiment (Gorham et al. 2008).

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