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High harmonic generation and QED effects induced by relativistic oscillating mirror YANJUN GU, Academy of Sciences of the Czech Republic, ONDREJ KLIMO, Czech Technical University in Prague, STEFAN WEBER, GEORG KORN, SERGEI BULANOV, Academy of Sciences of the Czech Republic — The laser-plasma interactions are dominated by the QED regime since intensities of the forthcoming laser facilities are approaching 10^{23-24} W/cm^2. Here we present the high brightness γ-photon emission and e^+e^- pair creation accompanied with the high harmonic generation. Relativistic oscillating mirror reflects the incident laser field and generates the focused attosecond pulse with enhanced intensity. A large number of high energy photons are emitted by the collisions between the trapped electrons and the high harmonic pulses. The corresponding photons are counter-propagating through the strong field which provides a large cross section for pair creation. Relativistic positron bunches are generated and further accelerated in the reflected laser field. The peak intensity of the γ-ray reaches 0.74 PW with the brilliance of 210^{24} s^{-1}mm^{-2} mrad^{-2} (0.1%BW)$^{-1}$ (at 58 MeV). A GeV positron beam is obtained with a particle number of 5.610^9. [1] Y. J. Gu, O. Klimo, S. V. Bulanov, S. Weber, Communications Physics, 1, 93 (2018) [2] Y. J. Gu, S. Weber, Opt. Express, 26, 19932 (2018).

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