**R008-P09**
**ポスター 2 ：11/25　AM1/AM2 （9:00-12:00）**

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# Performance evaluation of relativistic particle integrator with conditional branching statements inside a loop for PIC simulations

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It is known that the theoretical solution to the relativistic E-cross-B motion in a constant electromagnetic field falls into three cases depending on the sign of the squared relativistic Lorentz factor for the E-cross-B drift velocity of charged particles [Friedman & Semon PRE 2005]. Therefore, a new relativistic particle integrator developed by Umeda & Ozaki [EPS 2023] includes branching statements (IF/CASE) inside a loop involving iterations through particles, which depends on the condition of the squared Lorentz factor for the E-cross-B drift velocity. However, it is also known that the computational cost of the conditional branching inside a loop is expensive. In the present study, a performance comparison of several numerical techniques for the conditional branching inside a loop is made.