

# New observables for testing Bell inequalities in $W$ boson pair production

*Saturday 20 July 2024 11:45 (15 minutes)*

We show that testing Bell inequalities in  $W^\pm$  pair systems by measuring their angular correlation suffers from the ambiguity in kinetical reconstruction of the dilepton decay mode. We further propose a new set of Bell observables based on the measurement of the linear polarization of the  $W$  bosons that can be used in the semileptonic decay mode of  $W^\pm$  pair, and we analyze the prospects of testing the violation of Bell inequalities at  $e^+e^-$  colliders.

## Alternate track

1. Beyond the Standard Model

## I read the instructions above

Yes

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