

# DISCRETE 2014: Fourth Symposium on Prospects in the Physics of Discrete Symmetries



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## NOVEL T-VIOLATION OBSERVABLE OPEN TO ANY DECAY CHANNEL AT MESON FACTORIES

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Quantum Entanglement between the two neutral mesons produced in meson factories has allowed the first direct observation of Time-Reversal-Violation in the time evolution of the B neutral meson system between the two decays. The exceptional meson transitions are directly connected to semileptonic and CP-eigenstate decay channels. The possibility of extending the observable asymmetries to more decay channels confronts the problem of the “orthogonality condition”, which can be stated with this tongue-twister: Given a decay channel  $f$ , which is the decay channel  $f'$  such that the meson state not going to  $f$  is orthogonal to the meson state not going to  $f'$ ? We propose an alternative T-Violation Asymmetry in the meson factories which allows its opening to any pair of decay channels

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