

FIRST MATHEMATICAL APPLICATION: THE LIE-SANTILLI ISOTHEORY (1978):

1. Isotopy of the enveloping algebras

The Poincare'-Birkhoff-Witt-Santilli IsoTheorem

$$1, \quad X_i, \quad X_i \hat{\times} X_j \quad i \leq j, \quad X_i \hat{\times} X_j \hat{\times} X_k, \quad i \leq j \leq k, \dots$$

$$e^X = 1 + X/1! + X \hat{\times} X/2! + \dots = e^{X \hat{\times} \hat{T}(t,r,p,\psi,\dots)}$$

2. Lie-Santilli IsoAlgebras

$$[X_i \hat{\times} X_j] = X_i \hat{\times} X_j - X_j \hat{\times} X_i = \hat{C}_{ij}^k \hat{\times} X_k;$$

3. Lie-Santilli IsoGroups

$$A(w) = e^{X \hat{\times} \hat{T} \times w \times i} \times A(0) e^{-i \times w \times \hat{T} \times X}$$

R. M. Santilli, "On a possible Lie-admissible covering of Galilei's relativity in Newtonian mechanics for nonconservative and Galilei form-noninvariant systems," Hadronic J. **1**, 223-423 (1978),
<http://www.santilli-foundation.org/docs/Santilli-58.pdf>

APPLICATIONS: isorotational symmetry (1981), Lorentz-Santilli isosymmetry (1983), and other symmetries.