# SIDE 14.2

**SIDE**
**Symmetries and Integrability**
**of Difference Equations**

Contribution ID : 41

# The principle of transfer and integrable discrete systems.

Monday 19 Jun 2023 at 10:30 (00h30')

**Content** :

There is Hesse's principle of transfer: the transfer of geometric assertions from one dimension into another, facilitated by the fact that the projective subgroup stabilising a normal curve is isomorphic in every dimension. When space is coordinatised via a normal curve, geometric assertions become SL2-invariant equations, as opposed to homogeneous equations if a simplex is used. Although examples of KP, KdV and Painleve type are unified in this way, the relation should not be confused with dimensional reduction via integrable constraints, which places the systems, and the dimensions, into a hierarchy. Rather it is a path to understand the invariant geometric origin of the integrability. I will explain the integrable multi-quadratic quad-equations from this geometric point of view.

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