"Lattice vector" fields $\ell_1(\cdot), \ell_2(\cdot), \ell_3(\cdot)$, $x \in \Omega \subseteq \mathbb{R}^3$ (Davini; Parry).

\{d_a(x)\} dual fields, $d_a(x) \cdot \ell_b(x) = \delta_{ab}$

\[ \oint_C d_a \cdot d \mathbf{x} = \int \int_C \nabla \wedge d_a \cdot d \mathbf{x} \] Burgers vector

$S_{ab} \equiv \nabla \wedge d_a n \cdot d_b$, $n = d_1 \cdot d_2 \wedge d_3$

$S_{ab} = \frac{1}{2} d_a \cdot \varepsilon^{bcd} [\ell_c, \ell_d]$

- Elastic and plastic ('neutral') deformations
- Energy: $w(\{\ell_a\}, S, \ell \cdot \nabla S, \ldots)$. Constitutive assumption: can be truncated, $\rightarrow L$ is a finite dimensional Lie algebra of vector fields
- Discrete structures: discrete subgroups of corresponding Lie group are symmetries of $w$, as well as create a discrete set of vertices.
- In low dimensional cases transformation groups, proper discrete subgroups be classified.

$H^{1,\infty}$ weak * convergence of minimizers, allowing elastic and neutral plastic deformations.

($S = 0$ case: Cipot/Kinderlehrer; Fonseca/Parry.)