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The energy flux and internal geometrical structure of geomechanical continuum

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Because condition of compatibility is not satisfying for the defected body that intrinsic metric of continuum with the field of defects is non-Riemannian. This cause the problem of the energy flux determination in inhomogeneous deformed body (rock massive).

From the general thinks the deformation of continuum and defects generation - annihilation are two independent processes and can be described by the help of distinguish sets of variables. The process of deformations can be associated with the metric tensor of continuum and defects structure can be associated with the different kinds of curvature tensors. From this curvature tensors the coefficients of connection of continuum can be formed. It means that we can introduce both sets of variables independently.

We believe the intrinsic metric of the deformed continuum as a Finslerian. The orthogonality condition in Finsler space can be found as a g_{ij}(xˆk,\xiˆk)\xiˆi\etaˆi=0 (1) where vector $\etaˆi$ belong to tangential plane. Taking into account that (1) is non-symmetrical according the definition, we can build field of normal vectors as a set of gradients to the touch hyperplane of indicatrix.

We can build the continuous field of the rays propagation directions because energy of deformed body is the arbitrary. The continuity is very important from the physical point of view because the energy flux begins only on the source and stops on the sink.

Taking into account Eq.(1) direction of energy flux vector can be received as a normal to the equienergetic surface. For the arbitrary metric this surface is the indicatrix. Taking into account non-symmetrical of orthogonality we can determine the excess of storage energy.