or

$$K(x,p) = \frac{a^{ij}(x)p_ip_j}{b^i(x)p_i} \tag{5}$$

with $a_{ij}a^{jk} = \delta_i^k$ and we will again call these spaces Randers and, respectively, Kropina spaces on the cotangent bundle T^*M.

([8])

Let $L(x,y)$ be a regular Lagrangian on a domain $D \subset TM$ and let $H(x,p)$ be a regular Hamiltonian on a domain $D^* \subset T^*M$.

It is known that ~~As we know [8]~~ if L is a diferentiable map, we can consider the fiber derivative of L, locally given by the diffeomorphism between the open set $U \subset D$ and $U^* \subset D^*$:

$$\varphi(x,y) = (x^i, \dot{\partial}_a L(x,y)) \tag{6}$$

which is called the Legendre transformation. We can define, in this case, the function $H : U^* \longmapsto R$:

$$H(x,p) = p_a y^a - L(x,y), \tag{7}$$

where $y = (y^a)$ is the solution of the equations:

$$p_a = \dot{\partial}_a L(x,y). \tag{8}$$

In the same manner, the fiber derivative is given locally by:

$$\psi(x,p) = (x^i, \dot{\partial}^a H(x,p)), \tag{9}$$

the function ψ is a diffeomorphism between the same open sets $U^* \subset D^*$ and $U \subset D$ and we can consider the function $L : U \longmapsto R$:

$$L(x,y) = p_a y^a - H(x,p), \tag{10}$$

where $p = (p_a)$ is the solution of the equations:

$$y^a = \dot{\partial}^a H(x,p). \tag{11}$$

The Hamiltonian given by (7) is called the Legendre transformation of the Lagrangian L and the Lagrangian given by (10) is called the Legendre transformation of the Hamiltonian H. puneți L H

If (M,K) is a Cartan space, then (M,H) is a Hamilton manifold [8] where $H(x,p) = \frac{1}{2}K^2(x,p)$ is 2-homogenous on a domain of T^*M. So, we get the following transformation of H on U: ([8])

$$L(x,y) = p_a y^a - H(x,p) = H(x,p). \tag{12}$$

Proposition 1.1 ([8]) The scalar field $L(x,y)$ definited by (12) is a positively 2-homogeneous regular Lagrangian on U. puneți prop în italic {\it ...}

rând liber după prop.

Therefore, we get Finsler metric F of U, so that

$$L = \frac{1}{2}F^2 \tag{13}$$

Puneți textele tuturor Theoremelor, Lemelor, Propozițiilor, etc în italic {\it ...}