Structural unsaturated conductivity related to pore connectivity

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Preferential flow is realized mainly in structural (inter-aggregate) pores if real macropores like big fissures are absent. The unsaturated conductivity of structural pores $K_2(h)$ with h as pressure head is usually related to saturated conductivity of structural pores, KS_2 and the relative structural unsaturated conductivity $KR_2(h)$ is obtained and further used. The physical model of KR is based upon the ratio of the pore size distributions of fully saturated soil and the unsaturated portion of the porous system. In order to have the model applicable to the flow of water in the pore network the parameters of the tortuosity t and pore connectivity c are introduced. The pore connectivity factor c depends dominantly upon the description of the temporary locked pores. Having this information from the hysteresis of the soil water retention curve we derive c and since tortuosity is partly dependent upon c, we correct the usually as constant used value t. The procedure requires experimental determination of soil water retention curve, its hysteretic loop at least for range of the domain of structural pores and KS of the soil.