

**MODELLING THE WATER-RETENTION CURVE BASED ON THE CONCEPT
OF CAPILLARY HYSTERESIS AND LOGNORMAL PORE-SIZE
DISTRIBUTION OF SOIL: THEORY**

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The mathematical model of the soil hysteretic water-retention capacity is offered. The model describes the main and scanning curves of the soil wetting and drying as well as the reversal points. As a theoretical basis of the model a concept is used, according to which the function of differential soil moisture capacity at every point on any of the hysteresis curve takes only two values that correspond to the sorption and desorption equilibria of the water in the soil. This concept is in harmony with the ideas about the form of the curves forming the hysteresis loop of the water-retention capacity of the soil and does not create the undesirable "pumping effect". The model parameters are physically interpreted within the concepts of capillarity and lognormal distribution of the effective pore radii in the soil.

Key words: differential soil water capacity, soil water retention curve, capillarity, hysteresis loop, isotherm of soil water thermodynamic state, lognormal distribution of effective pore radii, air entry pressure, water entry pressure.