

Particle Size Fractal Characteristics of the Gravel Soil in Original Area of Debris Flow Valleys

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Abstract: Based on the particle distribution of 75 gravel soil samples from 19 debris flow valleys, the fractal theory is applied to study the characteristics of particle composition of gravel soil. The relationship between the characteristics of fractal dimension and particle composition is discussed later. The results show that: 1. the gravel soil possesses the characteristic of fractal, and mainly in one dimension fractal; 2. particles with one dimension fractal is fine graded; particles with two dimension fractal is weak graded, and it emerges when there exists a particle abrupt; 3. the average particle size fractal is between 2.45 and 2.78 in the 19 debris flow valleys, and it goes up with the increasing of clay content. The relationship between particle size fractal in one dimension and clay content can be expressed by: $Da = 0.108 \ln(pc) + 2.511$. At last, the significance of researching on the fractal characteristics of gravel soil in original area of debris flow valleys is discussed.

Key word: debris flow; gravel soil; fractal; particle composition

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