Transformation of steady fluid flow, in porous media, into a pulsed fluid flow; experiment findings and mathematical modeling HASSON M. TAVOSSI, Dept., of Physics, Astronomy & Geosciences, Valdosta State University, 1500 N. Patterson St., Valdosta, GA. 31698 — In this paper we present experimentally and mathematical model for the conditions under which a steady fluid flow passing through the porous media can transform itself into a pulsed fluid flow. Our experimental findings show that a pulsed fluid flow in the porous media can result from a steady flow, under certain conditions. This paper describes experimental conditions under which such a pulsed flow can result. The experimental setup is presented and a mathematical model is obtained using analogous mechanical oscillator of a mass-spring system, and an electrical oscillator consisting of the inductor-capacitor circuit. The proposed model shows the effects of fluid parameters such as; flow-rate, pressure drop, fluid density, viscosity, pore ratio and pore shape, on the resonance frequency of this pulsed flow in the porous media.

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