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TailoringVolume Dispersion in Fluidic Excitable Systems ELENI KATIFORI, MIGUEL RUIZ-GARCIA, University of Pennsylvania, ALEJANDRO MARTINEZ-CALVO, Universidad Carlos III de Madrid — A network of elastic fluidic tubes that exhibit a non-monotonic differential conductance can exhibit excitatory behavior for a broad range of material parameters [1,2].In the absence of any time dependence in thepressure input and output the system dynamics emerges spontaneously in the form of self-sustained waves, which travel through the tubes. These volume and pressure pulses result in areas of the fluidic network having a transient higher volume than the baseline volume. In this work we explore how, by tuning the material parameters such as the non-linearity of the fluidic resistor and the elasticity of the tube wall we can tailor how the local volume accumulation is dispersed in the system. A biological fluidic system endowed with non-linearities in the fluidic conductance (such as our own vasculature) could harness such mechanisms to facilitate hemodynamic control. [1] M Ruiz-Garcia, E Katifori, arXiv:2003.10003 [2] M Ruiz-Garcia, E Katifori, arXiv:2001.01811

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