CONJUGACY OF P-CONFIGURATIONS AND NONLINEAR SOLUTIONS TO A CERTAIN CONDITIONAL CAUCHY EQUATION

ORR MOSHE SHALIT[1]

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ABSTRACT. We study the connection between conjugations of a special kind of dynamical systems, called *P-configurations*, and solutions to homogeneous Cauchy type functional equations. We find that any two *regular* P-configurations are conjugate by a homeomorphism, but cannot be conjugate by a diffeomorphism. This leads us to the following conclusion (answering an open question posed by Paneah): *there exist continuous nonlinear solutions to the functional equation:*

$$f(t) = f\left(\frac{t+1}{2}\right) + f\left(\frac{t-1}{2}\right) \ , \ t \in [-1,1].$$

[1] Department of Mathematics, Technion - Israel Institute of Technology, Haifa 32000, Israel.

E-mail address: orrms@tx.technion.ac.il