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**Echo Effects in the Solar Coronal Loops** MARGARITA RYUTOVA — EUV coronal loops having well defined filamentary structure, often appear as an arcade of thin magnetic threads resembling winding in a curved solenoid or a funnel. Such arcades are typical to (but not limited by) the post-flare coronal structures formed immediately after a short explosive phase of a major flare. Compared to flare timescales, post-flare arcades are long living, well organized structures. Elemental filaments in arcades are, however, in highly dynamic state, showing not only a subtle oscillations, but harboring frequent microflares. These microflares, having various intensities, often appear simultaneously in different places, i.e. several elemental filaments far removed from each other light up almost simultaneously. Besides, many individual filaments produce "homologous microflares", i.e. strong localized brightenings may occur repetitively in the same filament. Time intervals between the first two brightenings and their successors fallow a pattern typical to temporal plasma echos studied theoretically and observed in laboratory plasma experiments. To study the spatial and temporal regularities in the post-flare coronal arcades we use high cadence uninterrupted time series of data taken by Transition Region and Coronal Explorer (TRACE) in the chromosphere/coronal lines (1600 A, Fe IX/X 171 A, and Fe XII 195 A). We find that these regularities can be understood on basis of a spatial, temporal, or spatio-temporal echoes of plasma waves resulted from nonlinear response of a system to impulsive disturbences. With the upcoming Solar-B mission the observed spatial-temporal echos can be used for diagnostic goals. In particular, one can estimate a local anisotropic electron and ion temperatures across the filaments, the electric current densities, and other characteristics of a system.

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