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(54) Title: RESONATOR NETWORKS FOR IMPROVED LABEL DETECTION, COMPUTATION, ANALYTE SENSING, AND TUNABLE RANDOM NUMBER GENERATION

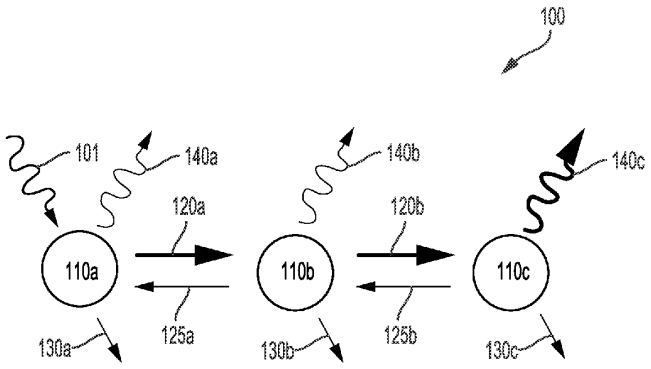


FIG. 1A

(57) Abstract: The present disclosure provides resonator networks adapted to a variety of applications. The networks include fluorophores, quantum dots, dyes, plasmonic nanorods, or other optical resonators maintained in position relative to each other by a backbone (e.g., a backbone composed of DNA). The networks may exhibit optical absorption and re-emission according to specified temporal decay profiles, e.g., to provide temporally -multiplexed labels for imaging or flow cytometry. The networks can include resonators that exhibit a dark state, such that the behavior of the network can be modified by inducing the dark state in one or more resonators. Such networks could be configured as logic gates or other logical elements, e.g., to provide multiplexed detection of analytes by a single network, to permit the temporal decay profile of the network to be adjusted (e.g., to use the networks as a controllable random number generator), or to provide other benefits.

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