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(54) Title: ENGINEERED QUANTUM PROCESSING ELEMENTS

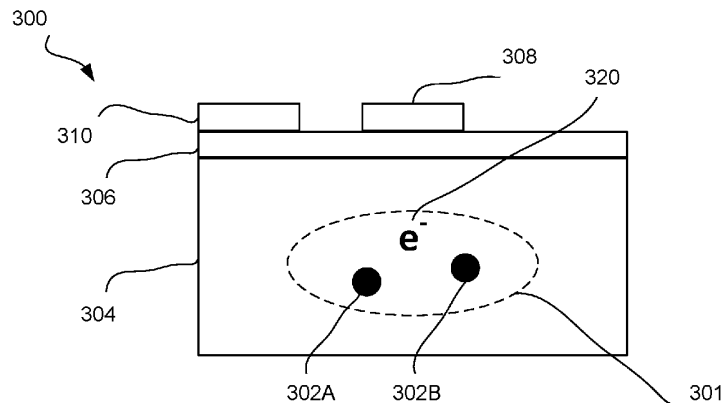


Fig. 3A

(57) Abstract: Engineered quantum processing elements are disclosed. The engineered quantum processing element includes a dopant dot embedded in a semiconductor substrate. A dielectric material forms an interface with the semiconductor substrate. The dopant dot includes a plurality of dopant atoms and one or more electrons/holes confined within the dopant dot. The geometrical configuration of the plurality of dopant atoms with respect to the semiconductor substrate is engineered to achieve optimal linear hyperfine Stark coefficients. Further, aspects of the present disclosure are directed to methods of fabricating such engineered quantum processing elements.

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