Abstracts

Room Temperature Electron Paramagnetic Resonance (EPR) Signal Storage

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The concept of a spin echo was first introduced and subsequently observed in a system of nuclear spins by E. L. Hahn in 1950. Later experiments performed by R. J. Blume in 1958 first demonstrated the phenomenon in electron spin systems. These echo experiments have since been the subject of a considerable amount of research performed by Mims, et. al. Recently, Bozanic, et. al. extended the temperature range at which spin echo experiments were performed from liquid helium to ambient temperatures by observing spin echoes in irradiated fused silica. On the basis of these room temperature experiments it is now feasible to utilize the spin echo phenomenon in microwave signal storage devices with time delays in excess of 150 µsec attained at room temperature for X-band signals. Other schemes to produce delays such as using superconducting lines, electron beams, acoustic and magnetic waves are impractical for delays greater than 10 µsec in the spectrum above C-Band.

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