

Enhancing Transverse Spin and Transverse Momentum in Metal-Dielectric Metal Sphere

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We study Belinfante's transverse spin in a sub-wavelength metal-dielectric-metal (MDM) sphere when the MDM sphere can exhibit avoided crossing due to hybridization of the surface plasmon with the Mie localized plasmon. We show that the change in the absorptive and dispersive character near the crossing can have significant effect on the transverse spin. An enhancement in the transverse spin is shown to be possible associated with the transparency (suppression of extinction) of the MDM sphere. The effect is attributed to the highly structured field emerging as a consequence of competition of the electric and magnetic modes.