Electromagnetic Properties of S_{11} States in a Light Cone Quark Model

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Abstract: Using relativistic spin-flavor wave functions of a Lorentz-covariant light cone quark model, we calculate the electromagnetic form factors of two S_{11} resonances, N(1535) and N(1650), and the helicity amplitudes $A_{1/2}$ and $S_{1/2}$ for electroexcitation of the S_{11} resonances from the nucleon. The electromagnetic form factors of these S_{11} resonances are found to be similar to those of the nucleon in shape, while the charge form factor of neutral N(1650) is nearly zero. The relative peak height of the S_{11} charge form factors is controlled by the mixing angle common to both resonance wave functions. As in most quark models, there is a systematic overestimate of $A^p_{1/2}$ in both N(1535) and N(1650) cases at the photon point. A sizeable $S_{1/2}$ for all cases is produced as suggested by experiments.

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