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Extinction Effects on Galaxy Counts for Bulge-Disk Galaxies

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We examine extinction effects by interstellar dust on galaxy counts for bulge-disk galaxies. Evolution of dust mass is calculated simultaneously with galaxy chemical evolution equations under the context of the so-called infall model, and 3-D radiative transfer calculation is performed with the scattering effects. We here present the galaxy number - magnitude relation, N(m), in *B*- and *K*-bands and the number - redshift relation, N(z), in *B*-band with internal absorption taken into account. We confirm that N(m) is differently affected by the evolution and the extinction between *B*- and *K*-bands, and that *K*-band is more suitable to distinguish q_0 values. We find that in *B*-band the extinction effects give a drastic change in N(m) in such a way that N(m) looks as if galaxies show only mild luminosity evolution. Three kinds of models – evolutionary, evolutionary with dust, and non-evolutionary ones can be most clearly distinguished from the observations of N(z) in z = 0.8 - 1.2 in the range of magnitude B = 20 - 24. We conclude that dusty evolution model of galaxies with properly adopted parameters can better satisfy both N(m) and N(z) distributions simultaneously than others.