Red Giant Branch of the Metal Poor Globular Clusters: Bump, Tip, and Distance from Near-Infrared Photometry

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We use the apparent K magnitudes of the red giant branch bump and tip of the selected globular clusters in order to estimate the distance of the clusters from the near-infrared photometry. The K magnitudes of the RGB bump and tip have been measured from the luminosity function of the selected RGB stars for sample clusters. Theoretical absolute M_K magnitudes of the RGB bump and tip are derived by the prediction of the Yonsei-Yale isochrones. Comparing the observed apparent K magnitude with the derived absolute M_K magnitude, we calculate the distance modulus of the clusters. The dependency of the derived distance modulus on the cluster age and the uncertainty of the distance measurement by the near-infrared photometry of the RGB bump and tip have been discussed.