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Bright metal-poor star survey with Tomo-e Gozen Camera

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The first metal enrichment in the Universe was made by a supernova explosion of a population III star. Second-generation stars were formed from the mixture of the pristine gas and the supernova ejecta. Metal-poor stars were survivors of second-generation stars in the Galactic halo. Their abundance pattern records the metal abundance at their formation and tell us the chemical evolution in the early Universe. Therefore, large programs to survey metal-poor stars are performed and provide metal-poor star candidates and high-resolution spectroscopic follow-ups measure the metallicities and abundances of the metal-poor stars. These intensive observations constrain the chemical evolution and the nature of supernovae in the early Universe. To enhance this study, the discovery of bright metal-poor stars, for which the high-resolution spectroscopic follow-up is easy, is desired. Therefore, we plan to search for all bright metal-poor stars in the northern hemisphere using narrow-band CaHK filters and the Tomo-e Gozen Camera on the Kiso Schmidt Telescope at the University of Tokyo. We report the status of a pilot survey having been performed over 5000deg2 in 2022 and the survey plan.

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