Track following of Ξ^- hyperons in nuclear emulsion for the E07 experiment AKIHIRO MISHINA, KAZUMA NAKAZAWA, KAORU HOSHINO, KAZUNORI ITONAGA, JUNYA YOSHIDA, KHIN THAN TINT, MYINT KYAW SOE, SHINJI KINBARA, HIROKI ITOH, YOKO ENDO, HIDE-TAKA KOBAYASHI, KAORI UMEHARA, HIROYUKI YOKOYAMA, DAISUKE NAKASHIMA, Gifu University, J-PARC E07 COLLABORATION — Events of Double-Λ and Twin Single-Λ Hypernuclei are very important to understand Λ-Λ and Ξ^--N interaction. We planned the E07 experiment to find Nuclear mass dependences of them with ten times higher statistics than before. In the experiment, the number of Ξ^- hyperon stopping at rest is about ten thousands which is ten times larger than before. Such number of tracks for Ξ^- hyperon candidates should be followed in nuclear emulsion plate up to their stopping point. To complete its job within one year, it is necessary for development of automated track following system. The important points for track following is Track connection in plate by plate. To carry out these points, we innovated image processing methods. Especially, we applied pattern match of K^- beams for 2nd point. Position accuracy of this method was 1.4 +/- $0.8\mu m$.If we succeed this application in about one minute for a track in each plate, all track following can be finished in one year.

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