

- ▶ YOSHIHIRO HORIHATA AND KEITA YOKOYAMA, *Weak-Riemann mapping theorem and Picard's little theorem in weak second order arithmetic*.
Mathematical Institute, Tohoku University, Aoba, Sendai, JAPAN, 980-8578.
E-mail: sa6m31@math.tohoku.ac.jp.
Mathematical Institute, Tohoku University, Aoba, Sendai, JAPAN, 980-8578.
E-mail: y-keita@math.tohoku.ac.jp.

In this research, we develop complex analysis within weak subsystems of second order arithmetic. We are mainly concerned with some versions of Riemann mapping theorem and Picard's theorem. It is known that basic parts of complex analysis can be developed within WKL_0 since Cauchy's integral theorem is equivalent to WKL_0 ([1]). In [2], it is shown that the full version of Riemann mapping theorem is equivalent to ACA_0 . In this study, we show that the Riemann mapping theorem for polygonal region is provable in RCA_0 . Using this, we can prove Picard's little theorem within WKL_0 .

[1] YOSHIHIRO HORIHATA, KEITA YOKOYAMA, *Picard's little theorem in second order arithmetic*, preprint.

[2] KEITA YOKOYAMA, *Non-standard analysis in ACA_0 and Riemann mapping theorem*, *Mathematical Logic Quarterly*, vol. 53 (2007), no. 2, pp. 132–146.