

# SUFFICIENT CONDITIONS OF THE EQUIVALENCY BETWEEN THE KUNUGI INTEGRAL AND THE HENSTOCK-KURZWEIL INTEGRAL

Christiana Rini Indrati

Department of Mathematics - Universitas Gadjah Mada

## Abstract

The Kunugi integral is defined by using fundamental sequence. It is not a simple definition. The Kunugi integral is equivalent with the DL-integral. By using the equivalency, it will be given some sufficient conditions such that the Kunugi integrability of a function on a compact interval is integrable on its every sub compact interval. Based on the results, it will be analyzed some sufficient conditions such that the Kunugi integral and the Henstock-Kurzweil integral are equivalent.

**Keywords:** the Kunugi integral; the DL-integral; the Hensctok-Kurzweil integral; compact interval.

## References

- Bruckner, A.M., Fleissner, and Foran, J., 1986, The Minimal Integral which includes Lebesgue integrable functions and Derivatives, *Colloquium Mathematicum*, Vol. L, 1986.
- Indrati, Ch.R., 2019, The Relationship between the Kunugi Integral and the Countably Lipschitz Integral, *Proceeding of the 8<sup>th</sup> SEAMS Conference 2019, AIP Conference Proceedings* 2192 (1), 050002.
- Indrati, Ch. R., 2003, Convergence Theorems for the Henstock Integral Involving Small Riemann Sums, *Real Analysis Exchange* 29 (1), (2003/2004), 481 – 488.
- Kunugi, K, 1956, Application de la methode des espaces ranges a la theorie de l'integration. I. *Proc. Japan Acad.*, 32, 215-220 (1956);
- Kunugi, 1959, Sur une generalisa tion de l'integrale. *Fundamental and Applied Aspects of Math. Mon. Ser. Res. Inst. App. El.*, Hokkaido University, 7, 1-30 (1959)
- Lee P.Y., 1989, *Lanzhou Lectures on Henstock Integration*, World Scientific, Singapore.
- Ummam, M.A., and Indrati, Ch.R., 2019, The Basic Properties and Some Convergence Theorems of the DL-Integral, *Proceeding of the 8<sup>th</sup> SEAMS Conference 2019, AIP Conference Proceedings* 2192 (1), 050004.