

## The Gauge Integral and its Relationship to the Lebesgue Integral

In 1957 and 1961 respectively, Jaroslav Kurzweil and Ralph Henstock independently discovered that by modifying the definition of the Riemann integral slightly, the resulting integral is one which actually integrates any real valued function that is Lebesgue integrable on a closed interval  $I^n \subset \mathbb{R}^n$ ; and its approximating sums are generalized Riemann sums. Conversely, a real valued function which is absolutely gauge integrable on  $I^n \subset \mathbb{R}^n$  is also Lebesgue integrable on  $I^n$  to the same value.

In this seminar, the presenter will define their integral, known as the generalized Riemann integral or the gauge integral, and explain the relationship between these two integrals.