GRÜSS INEQUALITY ON DISCRETE FRACTIONAL CALCULUS WITH DELTA OPERATOR

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Abstract

In this talk, firstly we will give basic definitions and theorems of discrete fractional calculus with delta operator. After that, using fractional delta operators we shall introduce the inequlity given by G. Grüss in 1935:

If f and g are continuous functions on $[a,b]$ satisfying

$$\phi \le f(t) \le \Phi \text{ and } \gamma \le g(t) \le \Gamma \text{ for all } t \in [a,b],$$

then

$$\left| \frac{1}{b-a} \int_a^b f(x)g(x)dx - \frac{1}{(b-a)^2} \int_a^b f(x)dx \int_a^b g(x)dx \right| \le \frac{1}{4}(\Phi - \phi)(\Gamma - \gamma).$$

Keywords: Discrete Fractional Calculus, Grüss type inequality

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