Integral-type operators on mobile intervals

Mirella Cappelletti Montano
Università degli Studi di Bari Aldo Moro
mirella.cappellettimontano@uniba.it

Vita Leonessa
Università degli Studi della Basilicata
vita.leonessa@unibas.it

In this talk, we present a sequence $(C_n)_{n\geq 1}$ of positive linear operators, introduced in [1] and acting on spaces of continuous functions as well as on spaces of integrable functions on $[0,1]$. These operators represent a Kantorovich-type modification, on mobile intervals, of the ones discussed in [2].

We state some qualitative properties of the sequence $(C_n)_{n\geq 1}$ and we prove that it is an approximation process both in $C([0,1])$ and in $L^p([0,1])$, also providing some estimates of the rate of convergence. Moreover, we determine an asymptotic formula and we prove that suitable iterates of the operators C_n converge, both in $C([0,1])$ and, under suitable assumptions, in $L^p([0,1])$ to a limit semigroup. Finally, we compare our operators with other existing ones in the literature showing that they allow a lower approximating error estimate.

References

[1] M. Cappelletti Montano, Vita Leonessa, *On a sequence of Kantorovich-type operators*, Constr. Math. Anal. **2** (3) (2019), 130-143.

[2] D. Cardenas-Morales, P. Garrancho, I. Raşa, *Bernstein-type operators which preserve polynomials*, Comput. Math. Appl. **62** (1) (2011), 158–163.