1153-46-60 **Mark Burgin***, Department of Mathematics, UCLA, 520 Portola Plaza, Los Angeles, CA 90095-1555. *Summation and Integration in Hyperspaces.* Preliminary report.

Summation and integration are important operations with numbers and functions. However, classical summation methods provide sums not for all series of real or complex numbers. That is why mathematicians developed various techniques for extending the domain of summable series. Examples are Cesàro, Abel or Borel summation. Nevertheless, neither of the known generalized techniques allows summability of arbitrary series of real (complex) numbers. Only the extension of real (complex) numbers to real (complex) hypernumbers establishes universal summability (Burgin, M. Hypernumbers and Extrafunctions: Extending the Classical Calculus, 2012). At the same time, this extension does not provide summability of arbitrary series and convergence of arbitrary sequences of real (complex) hypernumbers. To achieve this, we need to make one more extension to the numerical hyperspace over the space of real (complex) hypernumbers (Burgin, M. Semitopological Vector Spaces, 2017). Basic hypercompleteness of hyperspaces is established. The structure and properties of general hyperspaces used for rigorous determination of irregular operations with hypernumbers and extrafunctions, as well as their application to the problems of summation of hypernumbers and integration of extrafunctions are considered. (Received August 14, 2019)