

FROM BBGKY HIERARCHY  
TO NON-MARKOVIAN EVOLUTION EQUATIONS

*V.I. Gerasimenko<sup>1</sup>, V.O. Shtyk<sup>2</sup>, A.G. Zagorodny<sup>2</sup>*

<sup>1</sup>Institute of Mathematics,  
Nat. Acad. of Sci. of Ukraine  
(3, Tereshchenkivs'ka Str., Kyiv 01601;  
e-mail: gerasym@imath.kiev.ua),

<sup>2</sup>Bogolyubov Institute for Theoretical Physics,  
Nat. Acad. of Sci. of Ukraine  
(14b, Metrolohichna Str., Kyiv 03143, Ukraine)

S u m m a r y

The problem of description of the evolution of the microscopic phase density and its generalizations is discussed. With this purpose, the sequence of marginal microscopic phase densities is introduced, and the appropriate BBGKY hierarchy for these microscopic distributions and their average values is formulated. The microscopic derivation of the generalized evolution equation for the average value of the microscopic phase density is given, and the non-Markovian generalization of the Fokker–Planck collision integral is proposed.