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Yuri Movsisyan*, Alex Manoogian 1, Yerevan State University, 0025 Yerevan, Armenia. *On Boole-De Morgan Bilattices.*

It is commonly known that the free Boolean algebra on n free generators is isomorphic to the Boolean algebra of Boolean functions of n variables. The free bounded distributive lattice on n free generators is isomorphic to the bounded distributive lattice of monotone Boolean functions of n variables (R. Dedekind, 1897). In this talk we introduce the concept of Boole-De Morgan bilattice and prove a functional representation theorem for finitely generated free Boole-De Morgan bilattices. As a consequence we characterize finitely generated free distributive bilattices via functional representation. New functions alternative to Boolean functions are presented here which are applicable in Cryptography, discrete mathematics and the theory of quantum computers, too. (Received March 02, 2020)