

Abstract Submitted  
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**Interacting Bose gas confined in a Kronig-Penney potential<sup>1</sup>** O. A. RODRÍGUEZ, Posgrado en Ciencias Físicas, UNAM, M. A. SOLÍS, Instituto de Física, UNAM — We analyze the effect of the 1D periodic Kronig-Penney potential, composed of barriers of width  $b$  and separated a distance  $a$ , over an interacting Bose gas. At  $T = 0$ , the Gross-Pitaevskii equation is solved analytically in terms of the Jacobi elliptic functions for repulsive or attractive interaction between bosons. By applying the boundary conditions for periodic solutions as well as the normalization of the wave function, we arrive to a set of nonlinear equations from which we obtain the density profile and the chemical potential of the condensate as a function of the particle momentum. The profiles for attractive and repulsive interactions are compared with that of the non-interacting case. For attractive interaction we are able to observe a pronounced spatial localization in the middle of every two barriers. We reproduce the well known results when the Kronig-Penney potential becomes a Dirac Comb.

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