

GENERALIZED DEFORMED  
OSCILLATORS IN THE FRAMEWORK  
OF UNIFIED( $q; \alpha, \beta, \gamma; \nu$ )-DEFORMATION  
AND THEIR OSCILLATOR ALGEBRAS

*I.M. Burban*

Bogolyubov Institute for Theoretical Physics,  
Nat. Acad. of Sci. of Ukraine  
(14b, Metrolohichna Str., Kyiv 03680, Ukraine;  
e-mail: burban@bitp.kiev.ua)

S u m m a r y

The aim of this paper is to review our results on the description of multiparameter deformed oscillators and their oscillator algebras. We define generalized ( $q; \alpha, \beta, \gamma; \nu$ )-deformed oscillator algebras and study their irreducible representations. The Arik-Coon oscillator with the main relation  $aa^+ - qa^+a = 1$ , where  $q > 1$ , is embedded in this framework. We have found the connection of this oscillator with the Askey  $q^{-1}$ -Hermite polynomials. We construct a family of generalized coherent states associated with these polynomials and give their explicit expression in terms of standard special functions. By means of the solution of the appropriate classical Stieltjes moment problem, we prove the property of (over)completeness of these states.