1064-16-356 **Ualbai Umirbaev*** (umirbaev@math.wayne.edu), 656 W Kirby, Detroit, MI 48202. *Universal enveloping algebras and universal derivations of Poisson algebras.*

Let k be an arbitrary field of characteristic 0. It is shown that for any $n \geq 1$ the universal enveloping algebras of the Poisson symplectic algebra $P_n(k)$ and the Weyl algebra $A_n(k)$ are isomorphic and the canonical isomorphism between them easily leads to the Moyal product. A basis of the universal enveloping algebra P^e of a free Poisson algebra $P = k\{x_1, \ldots, x_n\}$ is constructed and proved that the left dependency of a finite number of elements of P^e over P^e is algorithmically recognizable. We prove that if two elements of a free Poisson algebra do not generate a free two generated subalgebra then they commute. The Fox derivatives on free Poisson algebras are defined and it is proved that an analogue of the Jacobian Conjecture for two generated free Poisson algebras is equivalent to the two-dimensional classical Jacobian Conjecture. A new proof of the tameness of automorphisms of two generated free Poisson algebras is also given. (Received September 14, 2010)