Maciej Borodzik[*] and Henryk Żołądek [**]

* Warsaw University, 02-097 Warszawa, ul. Banacha 2, Poland *E-mail address:* mcboro@mimuw.edu.pl

** Warsaw University, 02-097 Warszawa, ul. Banacha 2, Poland *E-mail address:* zoladek@mimuw.edu.pl

Classification of complex plane affine algebraic curves with zero Euler Characteristic .

The topological classification of complex algebraic curves is well known; they are surfaces of genus g deprived of n points and with some self- intersections. But, when we fix the topology, the classification with respect to automorphisms of the affine space is not that simple. Abhyankar, Moh, Suzuki, Zaidenberg and Lin have classified all plane curves of the type (0,1) and without self-intersections (the contractible ones).

We present complete classification of curves of the type (0,1) with one self-intersection and of the type (0,2) (with zero Euler characteristic). The classification contains 19 cases for the first type and 23 cases for the second type.

We present also new tools used in the proofs. These are: estimation of invariants of a singularity (like the Milnor number) via its order and codimension, the Poincaré-Hopf formula and a bound for the sum of codimensions of singularities.