# NOTE ON A THEOREM PROPOSED BY S.K.PERSIDSKII

PMM Vol. 33, №6, 1969, p. 1138

E. DAHLBERG
(Stockholm)

(Received November 13, 1969)
(This note was copied from the original manuscript kindly supplied by the Author)

In a recent paper [1], Persidskii has proposed a number of theorems concerning the stability of motion. The formulation and proof of Theorem 4 appears to be unsatisfactory. For instance, let

$$\dot{x} = \varphi_1 + R_1 = (y - x^3) + (y - x^3)^3 + y^4 + R_1, \quad R_1 = O(x^7)$$
$$\dot{y} = \varphi_2 + R_2 = -(y - x^3) + (y - x^3)^3 + y^4 + R_2, \quad R_2 = O(y^7)$$

Then the conditions of the theorem are obviously satisfied with

$$u = \varphi_1 + \varphi_2 = 2(y - x^3)^3 + 2y^4$$
$$v = x + y, \qquad v' = u + R_1 + R_2$$

As is well known, this derivative may be indefinite (cf. e. g. Malkin [2] Sect. 7), contrary to the statement made in the outlined proof. In fact, putting

$$R_1 = -x^7, \; R_2 = 0$$

it is easy to prove the stability of the example quoted.

## BIBLIOGRAPHY

1. Persidskii, S. K., Investigation of stability of solutions of some nonlinear systems of differential equations. PMM Vol. 32, №6, 1968.

2. Malkin, I. G., Theory of Stability of Motion. M.-L., Gostekhizdat, 1952.