Correction

E. A. Ivanov

1967

SovietRxiv

Abstract

Full Text

Correction

In my article "The field of a horizontal magnetic dipole in the presence of a spheroid," published in the journal *Differential Equations*, **3**, No. 9, 1967, there are inaccuracies. Thus, in (15) it should read

$$W_{Nn} = -\xi^0 \left((\xi^0)^2 - 1\right)^{1/2} R_{1n}^{(3)\prime}(c, \xi^0) I_5^{Nn} + \left((\xi^0)^2 - 1\right)^{1/2} R_{1n}^{(3)}(c, \xi^0) I_6^{Nn}.$$

In the expression U_{Nn}, instead of $\left((\xi^0)^2 - 1\right)^{1/2}$ there should be $((\xi^0)^2 - 1)$, and in the expression for the integral I_6^{Nn}, instead of $S_{1n}(c, \eta)$ one should take $S'_{1n}(c, \eta)$.

In systems (14), (17) it is assumed that $\beta_0 = 0$; therefore (17) contains $2M + 1$ equations with $2M + 1$ unknowns, and not $2M + 2$, as stated in the article.

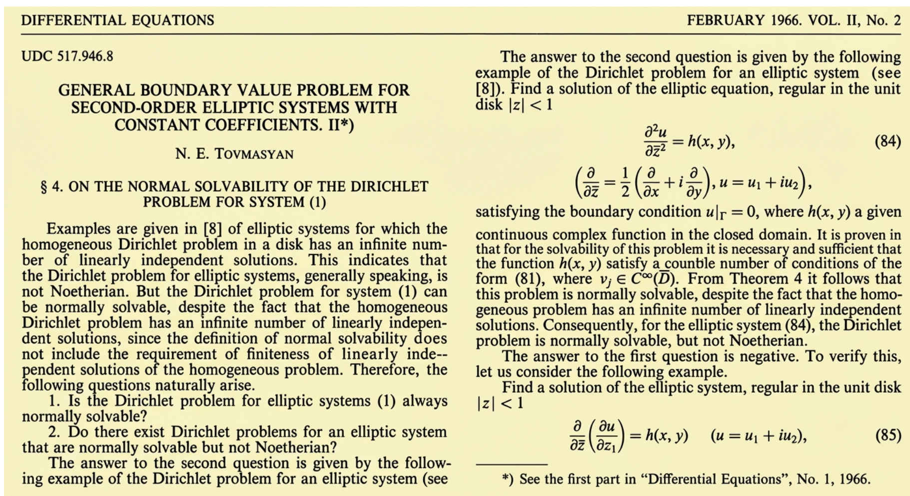
On p. 1548, the conditions for the integrals I_2^{Nn}, I_5^{Nn}, I_6^{Nn} to vanish are given under the assumption that the spheroidal functions are defined according to Stratton, although throughout the article they are defined according to Flammer.

I thank A. A. Paltsev, who pointed out these inaccuracies to me.

E. A. Ivanov

Figures

Source: Math-Net.Ru and CyberLeninka. Machine translation. Verify with the original.



DIFFERENTIAL EQUATIONS FEBRUARY 1966. VOL. II, No. 2

UDC 517.946.8

GENERAL BOUNDARY VALUE PROBLEM FOR SECOND-ORDER ELLIPTIC SYSTEMS WITH CONSTANT COEFFICIENTS. II*)

N. E. Tovmasyan

§ 4. ON THE NORMAL SOLVABILITY OF THE DIRICHLET PROBLEM FOR SYSTEM (1)

Examples are given in [8] of elliptic systems for which the homogeneous Dirichlet problem in a disk has an infinite number of linearly independent solutions. This indicates that the Dirichlet problem for elliptic systems, generally speaking, is not Noetherian. But the Dirichlet problem for system (1) can be normally solvable, despite the fact that the homogeneous Dirichlet problem has an infinite number of linearly independent solutions, since the definition of normal solvability does not include the requirement of finiteness of linearly inde-- pendent solutions of the homogeneous problem. Therefore, the following questions naturally arise.

1. Is the Dirichlet problem for elliptic systems (1) always normally solvable?
2. Do there exist Dirichlet problems for an elliptic system that are normally solvable but not Noetherian?

The answer to the second question is given by the following example of the Dirichlet problem for an elliptic system (see

The answer to the second question is given by the following example of the Dirichlet problem for an elliptic system (see [8]). Find a solution of the elliptic equation, regular in the unit disk $|z| < 1$

$$\frac{\partial^2 u}{\partial \bar{z}^2} = h(x, y), \tag{84}$$

$$\left(\frac{\partial}{\partial \bar{z}} = \frac{1}{2}\left(\frac{\partial}{\partial x} + i\frac{\partial}{\partial y}\right), u = u_1 + iu_2\right),$$

satisfying the boundary condition $u|_\Gamma = 0$, where $h(x, y)$ a given continuous complex function in the closed domain. It is proven in that for the solvability of this problem it is necessary and sufficient that the function $h(x, y)$ satisfy a counble number of conditions of the form (81), where $v_j \in C^\infty(\overline{D})$. From Theorem 4 it follows that this problem is normally solvable, despite the fact that the homogeneous problem has an infinite number of linearly independent solutions. Consequently, for the elliptic system (84), the Dirichlet problem is normally solvable, but not Noetherian.

The answer to the first question is negative. To verify this, let us consider the following example.

Find a solution of the elliptic system, regular in the unit disk $|z| < 1$

$$\frac{\partial}{\partial \bar{z}}\left(\frac{\partial u}{\partial z_1}\right) = h(x, y) \quad (u = u_1 + iu_2), \tag{85}$$

*) See the first part in "Differential Equations", No. 1, 1966.

Figure 1: Figure 1