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Doubly Periodic Punctured Plane Elasticity Problem with Relative Displacement

In this paper, three new different formulations of doubly periodic punctured plane elasticity problem with relative displacement are proposed.

$$\kappa\phi_0(t) + t\overline{\phi_0'(t)} + \overline{\psi_0(t)} = 2\mu g_j(t) + i\nu t + C_j$$
$$\left[\phi_0(z) + z\overline{\phi_0'(z)} + \overline{\psi_0(z)}\right]_{\Gamma_k} = iF_k, k = 1, 2.$$
$$Re\int_{L_j} \psi_0(t)dt = M_j, j = 0, 1, \cdots, m-1.$$

First and third equation above and

$$\left[\kappa\phi_0(z) - z\overline{\phi_0'(z)} - \overline{\psi_0(z)}\right]_{\Gamma_1} = 2\mu g_1,$$
$$\left[\phi_0(z) + z\overline{\phi_0'(z)} + \overline{\psi_0(z)}\right]_{\Gamma_2} = iF_2.$$

First and third equation above and

$$\left[\kappa\phi_0(z) - z\overline{\phi_0'(z)} - \overline{\psi_0(z)}\right]_{\Gamma_k} = 2\mu g_k, (k = 1, 2).$$

The solutions are given with an illustrated example by using approach of singular integral equations.