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THE STABILITY OF INTEGRAL EQUATIONS WITH THE CAUCHY KERNEL 175-183

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$$a(t)\varphi(t) + \frac{1}{\pi i} \int_L \frac{k(t, \tau)}{\tau - t} \varphi(\tau) d\tau = f(t).$$

as  $t$  on  $L$ , where  $L$  is a path in a complex plane.

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### E. Thandapani And E. Pandian

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$$\Delta(p_n h(y_n) \Delta y_n) + q_n f(y_{\sigma(n+1)}) = 0, \quad n = 0, 1, 2, \dots$$

is studied. Examples are inserted to illustrate the results.

### Ruggero Maria Santilli

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**Abstract:** In a preceding article we have introduced the isotopies of the of the differential calculus and of Newton's equations of motion. In this second paper we use these results to construct the isotopies of Hamiltonian mechanics, called *isohamiltonian mechanics*, permit the derivation of the most general possible isotopic Newton's equations from a variational principle which is of first-order in isospace over an isofield, but of arbitrary order when projected in convensional spaces over conventional fields. As a consequence, the isoarmiltonian mechanics permits a representation of the extended and deformable shape of the body considered as well as of nonlocal-integral and variationally non-self adjoint forces directly in the frame of the experimenter. We also show that the construction of isoanalytic representations from the given nonlinear, nonlocal and nonhamiltonian equations of motion (here called *inverse isotopic Newtonian problem*) is considerably easier than that of the conventional inverse Newtonian problem. The *conditions of variational isoself-adjointness, the calculus of isovariations, the iso-optimization theory* and related topics are briefly indicated, We then identify the isotopies of convensional quantization and show that they lead to unique and unambiguous isotopies of quantum mechanics capable of preserving all the essential characteristics of the original isotopic Newton's equations, thus permitting the representation in the fixed inertial frame of the experimenter of nonlinear, nonlocal and nonhamiltonian systems, with considerable broadening of the arena of applicability of convensional formulations.

### R. K. Singh, Bhopinder Singh And Kamaljeet Kour

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