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## Numerical Modeling of Mhd Stability in A Cylindrical Configuration

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A numerical modeling of the natural convection of a low Prandtl number electrically conducting fluid ( $Pr = 0.015$ ) under the influence of either axial or radial magnetic field in a cylindrical configuration has been studied.

The finite volume method is used in order to discretize the equations of continuity, momentum and energy (Navier-Stokes). The equations of mathematical model are a partial differential equations, nonlinear elliptic, complex and coupled. The SIMPLER and TDMA algorithms are used to solve this system and obtain a solution.

Stability diagrams are established according to the numerical results of this investigation. By examining these diagrams; the direction of magnetic field plays an important role in suppressing the convective flows. The magnetic field is more effective when it is perpendicular to the direction of the primary flow. This phenomenon has a serious implication on the design of magnetic systems for stabilizing or weakening the convective effects.

**Keywords:** Numerical Modeling, Partial Differential Equations (Navier-Stokes), Magnetic Field; Heat Transfer.

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## Almost Difference Sequence Spaces and Generalized Weighted Mean

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The difference spaces  $l_\infty(\Delta)$ ,  $c(\Delta)$  and  $c_0(\Delta)$  were studied by Kizmaz [1]. Malkowsky and Savas [2] have defined the sequence spaces  $Z(u, v, \lambda)$  which consist of all sequences such that  $G(u, v)$ -transforms of them are in  $\lambda \in \{l_\infty, c, c_0, l_p\}$ . Altay and Başar [3,4] have defined and studied the sequence spaces of non absolute type derived by using the generalized weighted mean over the paranormed spaces. Başar and Kirisci [5] are defined new almost sequence spaces by using generalized difference matrix and studied several properties of these new spaces. Polat, Karakaya and Şimşek [6] have defined new sequence spaces by combining a generalized weighted mean and a difference operator and investigated topological structure which have completeness, AK-property and AD-property. In this work, we

define the new almost sequence spaces  $f(u, v, \Delta)$  with generalized weighted mean and a difference operator. Afterward, we investigate some properties and compute the  $\alpha$ -,  $\beta$ - and  $\gamma$ -duals. Also the classes  $(f(u, v, \Delta) : \mu)$  and  $(\mu : f(u, v, \Delta))$  of infinite matrices are characterized, where  $\mu$  is any given sequence spaces.

Keywords : Matrix Domain, Almost Convergent, Difference Sequence Spaces, Weighted Mean

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## Homotopy Perturbation Method by Legendre Polynomials

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This paper illustrates the using of orthogonal Legendre polynomials to modify the Homotopy perturbation method. The presented modified Homotopy perturbation method is validated through two nonlinear examples. To show the efficiency and reliability of the proposed method handled results are compared with the exact solution of the problems.

Keywords: Homotopy perturbation method, Legendre polynomials, orthogonal polynomials, nonlinear differential equations.

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