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Review Article **Published Date:-2018-10-30 00:00:00**

Gravitation - Flat Power Field

A new principle of origin and the nature of the action of gravity forces are proposed. Forces of universal attraction have plane-symmetrical directions. On this basis, it becomes possible to reconsider certain regularities in natural science. The new principle of gravitation will allow to explain physical paradoxes, to improve methods of scientific research and some technological processes.

Review Article **Published Date:-2018-10-16 00:00:00**

Finite-time thermodynamics: Realizability domains of thermodynamic systems and P. Salamon's problem of efficiency corresponding to maximum power output of the system

The paper analyses performance boundaries of systems converting the heat energy into the mechanical or separation work. Authors approach this problem from the view-point of the finite-time thermodynamics. Using thermodynamic balance equations, authors provide the algorithm for calculation of realizability domain for such systems. The paper shows that the performance of these systems is the upper bounded function of the heat flux, assuming that heat and mass transfer coefficients are given. Authors present sufficient conditions under which the efficiency (specific heat flux per unit of the useful flux) of the system does not depend on kinetic coefficients when operating in the maximum performance mode. The paper shows how to use these conditions to optimally choose the separation order for multicomponent distillation.

Research Article **Published Date:-2018-09-20 00:00:00**

Sounding procedure for characterization of big fusion reactor chambers by means of a compact neutron source with a nanosecond pulse duration

In the paper a methodology that is elaborated for characterization of big-sized chambers of modern and future nuclear fusion reactors is described. It gives an opportunity to define distortions introduced by surroundings, systems and elements of the chamber into the neutron field generated during the reactors' operation. The procedure is based on two types of experimental techniques supported by MCNP numerical modelling. These two classes are: 1) the neutron activation methods for measuring changes in anisotropy of the "absolute" neutron yields, and 2) the time-of-flight process for determination of neutron spectra deformations. MCNP calculations afterwards give an opportunity to fix just those elements of the surroundings that introduce the main impact in the perturbed neutron field characteristics.

Review Article **Published Date:-2018-08-17 01:00:00**

Magnetohydrodynamic CNTs Casson Nanofluid and Radiative heat transfer in a Rotating Channels

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The main purpose of this investigation is to inspect the innovative conception of the magneto hydrodynamic (MHD) nanoparticles of single wall carbon nanotubes base on the fluids (water, engine oil, and ethylene, glycol and kerosene oil) between two rotating parallel plates. Carbon nanotubes (CNTs) parade sole assets due to their rare structure. Such structure has significant optical and electronics features, wonderful strength and elasticity, and high thermal and chemical permanence. The heat exchange phenomena is deliberated subject to thermal radiation. Kerosene oil is taken as based nano fluids because of its unique attention due to their advanced thermal conductivities, exclusive features, and applications. The fluid flow is presumed in steady state. With the help of suitable resemblance variables, the fundamental leading equations have been converted to a set of differential equations. To obtain the solution of the modeled problem, the homotopic approach has been used. The influence of imbedded physical variables upon the velocities and temperature profiles are defined and deliberated through graphs. Moreover, for the several values of relevant variables, the skin fraction coefficient and local Nusselt number are tabulated. Plots have been presented in order to examine how the velocities and temperature profile get affected by various flow parameters.

Review Article **Published Date:-2018-08-17 00:00:00**

High energy HF (DF) lasers

Non-chain HF (DF) lasers are the most suitable and ecologically safe source of powerful and energetic coherent radiation in the 2.6-3.1 cm (HF laser) and 3.5-4.1 cm (DF laser) spectral regions. Among the different methods of HF (DF) pulse and pulse-periodic laser creation suggested by our team under the guidance of Academician A.M. Prokhorov was self-sustained volume discharge (SSVD). It is well known that a SSVD can be established in a gas by creating a primary electron density that exceeds a certain minimum value nmin throughout the discharge gap.
