477. H. S. Wall: *The behavior of certain Stieltjes continued fractions near the singular line.*

The author shows that the function $f(z)$ represented by a continued fraction of the form $1/1+g_1z/1+(1-g_1)g_2z/1+(1-g_2)g_3z/1+\cdots$ in which $0<g_n<1$, $n=1, 2, 3, \cdots$, and the series $\sum|1-2g_n|$ converges, approaches a finite limit $\alpha(s)$ as $z\rightarrow -s$, $s>1$, along any path in the upper half-plane, and the limit $\bar{\alpha}(s)$, the complex conjugate of $\alpha(s)$, as $z\rightarrow -s$ from the lower half-plane. The function $\alpha(s)$ is continuous and not real, $s>1$. (Received August 18, 1941.)

Applied Mathematics

478. Arthur Korn: *On the problem of pulsating spheres in a liquid.*

The problem of the pulsating spheres treated for the first time almost 80 years ago by the Norwegian mathematician C. A. Bjerknes and chosen by the author as the point of departure for a mechanical theory of gravitation and the electromagnetic field, must be considered as a fundamental problem of mathematical physics. Interactions inversely proportional to the square of the distance can solely be produced by such spheres changing their volumes periodically with approximately the same frequency in an incompressible or approximately incompressible fluid. The sign of the forces of interaction (attraction in the case of equal phases, repulsion in the case of opposite phases) is a certain difficulty for the hypothesis that electrical particles are pulsating spheres. The sign can be changed, if one imposes on the spheres the condition that they maintain the amplitudes of their pulsations at any displacement of the spheres, a condition which is not imposed in Bjerknes' problem. The calculations are a little complicated, if one has to find out the pressure at the surfaces of the spheres and if one derives from these pressures the forces in question. Here is given a rather simple way of deriving the forces from the energy of the liquid in the case of displacements of the spheres, and one can easily understand the change of the sign, if one imposes on the spheres the condition that they maintain the amplitudes of their pulsations at any displacement. (Received September 22, 1941.)

Geometry

479. George Comenetz: *Isotropic curves on a surface.*

Let S be a regular analytic surface in complex three-dimensional euclidean space, and O a point of S at which the tangent plane T is isotropic. Such a point is singular for the differential equation $ds^2=0$ of the isotropic net of curves on S. The problem is to describe the regular analytic isotropic curves on S that pass through O. Let L be the isotropic straight line in T through O, and p its order of contact with S. Draw an arbitrary curve F on S having contact of order p with L at O. Draw the normal to S at a point V of F, and let q be the "order of coincidence" of the normal with its limit L, as V approaches O. Then if $q>p/2$ the number of isotropic curves is 0 or 2, if $q=p/2$ it is 1 or 2 or $1+\infty^1$, and if $q<p/2$ it is 2. The conditions under which the different possibilities are realized, and the orders of contact of the curves with L and one another, are stated. (Received September 15, 1941.)

480. J. J. DeCicco: *Bi-isothermal systems of curves.*

A generalization of the concept of isothermal family of curves in four-dimensional space S_4 is obtained in this paper. Kasner has termed the correspondences of S_4, de-