papers quoted in the preceding Notes the thesis of E. R. Neumann.\(^5\)
This author assumes that \(f(x)\) is of bounded variation on \((0, + \infty)\), and is continuous together with its derivatives of the first and second order except on a finite positive interval. In addition a complicated condition of quadratic integrability also involving derivatives up to and including the second order was assumed. More recently Wiarda\(^6\) has considered summability \((C, k)\) for ordinary Laguerre series.

9. The method here presented works well in the case of Hermitian series but it does not extend easily to general Laguerre series. We shall study these series by somewhat different methods in later publications.

\(^1\) These PROCEEDINGS, 12, 1926 (265–269).
\(^2\) See theorem III of the Second Note. Messrs. Hardy and Littlewood have given applications of the Tauberian theorem quoted in the text to the theory of ordinary Fourier series. See London, Proc. Math. Soc. (2) 18, 1918 (228–235). As far as I know this theorem has not been applied to any other type of expansion in terms of orthogonal functions.
\(^3\) See the First Note, §3, these PROCEEDINGS, 12, 1926 (261–265).
\(^5\) Neumann, E. R.: Die Entwicklung willkürlicher Funktionen nach den Hermiteschen und Laguerreschen Orthogonalfunktionen auf Grund der Theorie der Integralgleichungen. Inaugural—Dissertation, Breslau, 1912.—This paper is not easily accessible and does not seem to have been adequately reviewed anywhere.

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ON CONFORMAL GEOMETRY

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1. **Introduction.**—This paper is a continuation of my last one in these PROCEEDINGS.\(^1\) Based on the fundamental conformal tensor \(G_{\alpha\beta}^\gamma\) a set of functions \(\Gamma_{\alpha\beta}^\gamma\) is introduced which correspond closely to Christoffel’s symbols \(\Gamma_{\alpha\beta}^\gamma\) of Riemann geometry or to the functions \(*\Gamma_{\alpha\beta}^\gamma\) of my projective theory of the affinely connected manifold.\(^2\) However, in place of the derivatives occurring ordinarily in the equations of transformation of functions of this sort there occur the coefficients of a set of non-integrable linear differential forms \(\Omega\). Algebraic conditions for the equivalence of two conformal manifolds may be established by a method analogous to that used by E. B. Christoffel\(^3\) for the case of the Riemann geometry.

I have not attempted to give a geometrical interpretation of this work.

2. **The Fundamental Conformal Tensor.**—Conformal properties of a
Riemann space are by definition those properties which persist when the fundamental metric tensor \( g_{ab} \) is altered by multiplication by a factor \( \sigma(x) \). Such changes in the metric nature of the manifold leave invariant the angle \( \theta \) defined by

\[
\cos \theta = \frac{g_{ab}dx^a dx^b}{\sqrt{g_{ab}dx^a dx^b} \sqrt{g_{ab}dx^a dx^b}}
\]

between two lines elements \( dx^a \) and \( dx^a \) issuing from a point \( P \). It is to this circumstance that the word conformal is due in the designation of this class of properties. In the conformal manifold only the ratios of lengths at a point are of significance. This plays an important rôle in Weyl's theory of relativity.

Let us denote by

\[
\mathbb{G}: x^a = f^a(x^1, \ldots, x^n); (xx) = 0
\]

an analytic transformation of the coordinates \((x)\) and \((\bar{x})\) of two equivalent conformal spaces having metric tensors \( g_{ab}(x) \) and \( g_{\mu\nu}(\bar{x}) \), respectively. Here \((xx)\) is the Jacobian of \( \mathbb{G} \). Then

\[
\tilde{g}_{\mu\nu} = \sigma(x) g_{\alpha\beta} \frac{\partial x^\alpha}{\partial x^\mu} \frac{\partial x^\beta}{\partial x^\nu}.
\]

The arbitrary factor \( \sigma(x) \) which enters into (2) may be eliminated by forming the determinant of both members of these equations. This gives

\[
| \tilde{g}_{\mu\nu} | = \sigma^n | g_{\alpha\beta} | (xx)^2.
\]

Hence

\[
\bar{G}_{\mu\nu} = (xx)^{-2} G_{\alpha\beta} \frac{\partial x^\alpha}{\partial x^\mu} \frac{\partial x^\beta}{\partial x^\nu},
\]

where

\[
\bar{G}_{\mu\nu} = \left| \tilde{g}_{\gamma\delta} \right|^{1/n} ; G_{\alpha\beta} = \left| g_{\alpha\beta} \right|^{1/n}.
\]

The relative tensor \( G_{\alpha\beta} \) satisfies the symmetry conditions \( G_{\alpha\beta} = G_{\beta\alpha} \) as well as the condition \( | G_{\alpha\beta} | = 1 \).

The contravariant form of the equations (3) is

\[
\bar{G}^{\mu\nu} = (xx)^{2/n} G^{\alpha\beta} \frac{\partial x^\mu}{\partial x^\alpha} \frac{\partial x^\nu}{\partial x^\beta},
\]

where the relative tensor \( G^{\alpha\beta} \) is defined as the cofactor of \( G_{\alpha\beta} \) in \( | G_{\alpha\beta} | \).

Now the tensor \( G_{\alpha\beta} \) which is a relative invariant of weight \( -\frac{2}{n} \) is one of the possible metric tensors of the manifold. Moreover it is conformal in character, i.e., it remains unaltered when the functions \( g_{\alpha\beta} \) are replaced by \( \sigma g_{\alpha\beta} \). This simple deduction of a fundamental conformal tensor \( G_{\alpha\beta} \)
enables us to see clearly and distinctly the real analytical nature of the conformal geometry. *The conformal geometry is the invariant theory of the equations* (3).

In order to develop the conformal geometry in a proper manner a determination of certain differential expressions in the $G$'s together with their equations of transformation is absolutely indispensible. It is to this that we now pass.

3. *Some Fundamental Functions.*—Let us begin by differentiating the equations (3) obtaining

$$\frac{\partial G_{\mu}^{\nu}}{\partial x^t} = -\frac{2}{n} G_{\mu}^{\nu} \tilde{\phi} + (xx) - \frac{2}{n} \left\{ \frac{\partial G_{\alpha\beta}}{\partial x^\alpha} \frac{\partial x^\alpha}{\partial x^t} \frac{\partial x^\gamma}{\partial x^t} + G_{\alpha\beta} \frac{\partial x^\alpha}{\partial x^t} \frac{\partial x^\beta}{\partial x^t} \right\}$$

where we have put

$$\tilde{\phi} = \partial \log (xx)/\partial x^t.$$ 

By an interchange of indices in (5) we next deduce

$$\frac{1}{2} \left\{ \frac{\partial G_{\mu}^{\nu}}{\partial x^t} + \frac{\partial G_{\nu}^{\mu}}{\partial x^t} - \frac{\partial G_{\mu\nu}}{\partial x^t} \right\} = (xx) - \frac{2}{n} \left\{ \frac{1}{2} \left( \frac{\partial G_{\alpha\beta}}{\partial x^\gamma} + \frac{\partial G_{\beta\gamma}}{\partial x^\alpha} - \frac{\partial G_{\gamma\alpha}}{\partial x^\beta} \right) + \frac{\partial x^\alpha}{\partial x^t} \frac{\partial x^\beta}{\partial x^t} \frac{\partial x^\gamma}{\partial x^t} + G_{\alpha\beta} \frac{\partial x^\alpha}{\partial x^t} \frac{\partial x^\beta}{\partial x^t} \right\} - \frac{1}{n} \left\{ \tilde{G}_{\mu}^{\nu} \tilde{\phi} + \tilde{G}_{\nu}^{\mu} \tilde{\phi} - \tilde{G}_{\mu\nu} \tilde{\phi} \right\}.$$ 

Then from (4) and (6) we have

$$\tilde{K}_{\mu}^{\nu} \frac{\partial x^t}{\partial x^a} = \frac{\partial x^t}{\partial x^a} + K_{\mu}^{\nu} \frac{\partial x^a}{\partial x^t} + \frac{1}{n} \left\{ \frac{\partial x^t}{\partial x^a} \tilde{\phi} + \frac{\partial x^t}{\partial x^a} \tilde{\phi} - \tilde{G}_{\mu}^{\nu} \tilde{\phi} \right\},$$

where

$$K_{\mu}^{\nu} = \frac{1}{2} G_{\mu}^{\nu} \left( \frac{\partial G_{\beta\gamma}}{\partial x^\alpha} + \frac{\partial G_{\gamma\alpha}}{\partial x^\beta} - \frac{\partial G_{\alpha\beta}}{\partial x^\gamma} \right).$$

The functions $K_{\mu}^{\nu}$ satisfy the symmetry conditions $K_{\mu\nu}^{\xi} = K_{\nu\mu}^{\xi}$; also the identity $K_{t\xi}^{\xi} = 0$ is readily verified.

These functions $K_{\mu}^{\nu}$ were originally found in a different form by J. M. Thomas as the conformal analogue of my projective connection $\Pi_{\mu}^{\nu}$. He also set up a sort of equi-conformal curvature tensor $F_{\alpha\beta}^{\xi}$, so called since it possesses a tensor character under equi-transformations or transformations of jacobian unity but not under arbitrary transformations (1). The equi-tensor $F_{\alpha\beta}^{\xi}$ is defined by

$$F_{\alpha\beta}^{\xi} = \frac{\partial K_{\alpha}^{\xi}}{\partial x^\gamma} - \frac{\partial K_{\beta}^{\xi}}{\partial x^\gamma} + K_{\gamma}^{\xi} K_{\alpha\beta} - K_{\gamma}^{\xi} k_{\alpha\beta}.$$
and it is but a matter of calculation to show that $F^{\xi}_{\alpha\beta}$ transforms according to the equations

$$
F^{\lambda}_{\mu\nu} = F^{\xi}_{\alpha\beta} \frac{\partial x^\alpha}{\partial x^{\xi}} \frac{\partial x^\beta}{\partial x^{\xi}} + \delta^\lambda_\nu \bar{C}^\alpha_{\mu} - \delta^\lambda_\nu \bar{C}^\alpha_{\mu} + \frac{1}{n!} (\delta^\xi_\mu \bar{C}^\alpha_{\nu} - \delta^\xi_\nu \bar{C}^\alpha_{\mu} ) \bar{C}^\alpha_{\nu} \bar{C}^\alpha_{\nu} 
$$

where

$$
\bar{C}^\alpha_{\mu} = -\frac{1}{n!} K^\xi_{\alpha\beta} \bar{V}_\xi - \frac{1}{n!} \bar{V}_{\mu} \bar{V}_\nu + \frac{1}{n!} \frac{\partial \bar{V}_\mu}{\partial x^\alpha} \bar{C}^\alpha_{\nu} = \bar{C}^{\alpha'} \bar{C}^{\alpha''}.
$$

From the quantities $F^{\xi}_{\alpha\beta}$ we may now form the quantities $F_{\alpha\beta}$ and $F$ defined by

$$
F_{\alpha\beta} = F^{\xi}_{\alpha\beta}; \quad F = G^{\alpha\beta} F_{\alpha\beta}
$$

which have equations of transformation

$$
\bar{F}_{\mu\nu} = F^{\xi}_{\alpha\beta} \frac{\partial x^\alpha}{\partial x^{\xi}} \frac{\partial x^\beta}{\partial x^{\xi}} - \left( \frac{n-2}{n} \right) \bar{C}^\xi_{\mu \nu} + \bar{C}^\xi_{\mu \nu} + \left( \frac{n-1}{n!} \right) \bar{C}^{\alpha'} \bar{C}^{\alpha''} \bar{C}^{\alpha''} \bar{C}^{\alpha''} F_{\alpha\beta},
$$

$$
\bar{F} = (xx)^n F + 2(n-1) \bar{C}^\xi_{\mu \nu} + \left( \frac{n-1}{n!} \right) \bar{C}^{\alpha'} \bar{C}^{\alpha''} \bar{C}^{\alpha''} \bar{C}^{\alpha''} F_{\alpha\beta}.
$$

We shall also find that we shall need an expression

$$
Q_{\alpha\beta} = F_{\alpha\beta} - \frac{F}{2(n-1)} G_{\alpha\beta}
$$

having equations of transformation

$$
\bar{Q}_{\mu\nu} = Q_{\alpha\beta} \frac{\partial x^\alpha}{\partial x^{\xi}} \frac{\partial x^\beta}{\partial x^{\xi}} - \left( \frac{n-2}{n} \right) \left\{ K^\xi_{\alpha\beta} \bar{V}_\xi + \frac{1}{n!} \bar{V}_{\mu} \bar{V}_\nu - \frac{1}{n!} \frac{\partial \bar{V}_\mu}{\partial x^\alpha} \bar{V}_\nu - \frac{1}{n!} \frac{\partial \bar{V}_\nu}{\partial x^\alpha} \bar{V}_\mu \right\}.
$$

Finally the quantities

$$
Q^\xi_{\alpha\beta} = G^{\alpha\beta} Q_{\alpha\beta}
$$

transform by the equations

$$
\bar{Q}^\xi_{\mu\nu} = (xx)^n Q_{\alpha\beta} \frac{\partial x^\alpha}{\partial x^{\xi}} \frac{\partial x^\beta}{\partial x^{\xi}} - \left( \frac{n-2}{n} \right) \left\{ K^\xi_{\alpha\beta} \bar{V}_\xi + \frac{1}{n!} \bar{V}_{\mu} \bar{V}_\nu - \frac{1}{n!} \frac{\partial \bar{V}_\mu}{\partial x^\alpha} \bar{V}_\nu - \frac{1}{n!} \frac{\partial \bar{V}_\nu}{\partial x^\alpha} \bar{V}_\mu \right\}.
$$

4. The Associated Differential Forms.—In the preceding paragraph all indices have had values (1, 2, ..., $n$). It will now be found helpful to agree that:

Greek letters denote indices (0, 1, ..., $n$);
Latin letter denote indices (0, 1, ..., $n$, $\infty$).
We shall consider this convention to hold unless the contrary is stated.

Now consider a set of linear differential forms

$$\circ \bigcirc: \frac{\partial x^i}{\partial x^k} \, dx^i$$

in which the "derivative" $\frac{\partial x^i}{\partial x^k}$ is defined as the element in the $i$th column and $k$th row of the matrix

$$
\begin{array}{cccccc}
0 & 1 & \ldots & n & \infty \\
0 & 1 & 0 & \ldots & 0 & 0 \\
1 & \psi_1 & \frac{\partial x^1}{\partial x^1} & \ldots & \frac{\partial x^n}{\partial x^1} & 0 \\
\vdots & \vdots & \vdots & \ddots & \vdots & \vdots \\
\vdots & \vdots & \vdots & \vdots & \ddots & \vdots \\
n & \psi_n & \frac{\partial x^1}{\partial x^n} & \ldots & \frac{\partial x^n}{\partial x^n} & 0 \\
\infty & \frac{1}{\psi} & \frac{\partial x^1}{\partial x^\psi} & \ldots & \frac{\partial x^n}{\partial x^\psi} & (xx)^2 \\
\end{array}
$$

where we have put

$$\frac{\partial x^i}{\partial x^\psi} = \frac{\partial x^i}{\partial x^\sigma} \quad (\sigma, \tau = 1, 2, \ldots, n).$$

The differential forms $\bigcirc \bigcirc$ will be called the associated differential forms. Defining the inverse "derivatives" $\frac{\partial x^i}{\partial x^k}$ by a matrix analogous to the matrix (8) it is readily verified that the identities

$$\frac{\partial x^i}{\partial x^k} \frac{\partial x^k}{\partial x^j} = \delta^i_j; \quad \frac{\partial x^i}{\partial x^k} \frac{\partial x^j}{\partial x^k} = \delta^i_k$$

hold. Also it should be noted that the restricted set of derivatives $\frac{\partial x^\alpha}{\partial x^\beta}$ satisfies identities

$$\frac{\partial x^\alpha}{\partial x^\gamma} \frac{\partial x^\gamma}{\partial x^\alpha} = \delta^\gamma^\alpha; \quad \frac{\partial x^\alpha}{\partial x^\gamma} \frac{\partial x^\gamma}{\partial x^\alpha} = \delta^\alpha^\gamma.$$ 

In fact the derivatives $\frac{\partial x^\alpha}{\partial x^\beta}$ are derivable from the group

$$\bigcirc \bigcirc: x^\sigma = \bar{x}^\sigma + \log (xx); \quad x^\alpha = f^\alpha (x^1, \ldots, x^n) \quad \alpha \neq 0$$

which is fundamental in the projective theory of the affinely connected manifold.
5. The Associated Connection.—Let us now define a set of functions \( \Gamma^i_{ka} \) by the equations

\[
\begin{align*}
\Gamma^i_{ko} &= -\frac{1}{n} \delta^i_k; \\
\Gamma^i_{o\gamma} &= -\frac{1}{n} \delta^i_\gamma; \\
\Gamma^{\alpha}_{\beta \gamma} &= K^\alpha_{\beta \gamma}; \\
\Gamma^{\gamma}_{\beta \gamma} &= \left(\frac{n}{n-2}\right) Q_{a\beta}; \\
\Gamma^0_{\alpha \beta} &= \left(\frac{n}{n-2}\right) Q^\alpha_{\beta}; \\
\Gamma^0_{0 \gamma} = \Gamma^0_{\gamma 0} &= 0
\end{align*}
\]

(\( \alpha, \beta, \gamma = 1, \ldots, n \))

where the values of indices not in agreement with the convention (A) have been indicated. The functions \( \Gamma^i_{ka} \) transform by the equations

\[
\Gamma^i_{ja} \frac{\partial x^i}{\partial x^a} = \frac{\partial}{\partial x^j} \left( \frac{\partial x^i}{\partial x^a} \right) + \Gamma^i_{ka} \frac{\partial x^k}{\partial x^j} \frac{\partial x^a}{\partial x^\gamma}
\]

with reference to the forms \( \Omega \). Thus the \( \Gamma \)'s constitute a sort of associated conformal connection; their equations of transformation are identical in form with the well-known equations of transformation of the affine connection of Riemann space.

6. The Conformal Curvature Tensor.—In terms of the functions \( \Gamma^i_{ka} \) and their derivatives invariants may be constructed in much the ordinary manner. Let us differentiate the equations (9) with respect to variables \( x^a \) and from the resulting equations subtract those obtained by interchange of the \( \alpha \) and \( \beta \) indices. Then on eliminating second derivatives by (9) we have

\[
\mathcal{B}^i_{ja} \frac{\partial x^i}{\partial x^a} = \mathcal{B}^i_{k\alpha \beta} \frac{\partial x^k}{\partial x^j} \frac{\partial x^\alpha}{\partial x^\gamma} \frac{\partial x^\beta}{\partial x^\gamma}
\]

(10)

where the tensor \( \mathcal{B}^i_{ka\beta} \) is given by

\[
\mathcal{B}^i_{ka\beta} = \frac{\partial \Gamma^i_{ka}}{\partial x^\beta} - \frac{\partial \Gamma^i_{k\alpha}}{\partial x^a} + \Gamma^i_{ja} \Gamma^j_{ka} - \Gamma^i_{ja} \Gamma^j_{ka}.
\]

(11)

The functions \( \mathcal{B}^i_{ja\beta} \) have a form similar to (11). When we differentiate the equations (10) and again eliminate second derivatives by (9) we find a certain departure in the equations which result from those of linear tensor character. We are thus led to invariants which do not transform by the simple tensor law.\(^5\) But this need not delay us here.

Without attempting to determine all identities satisfied by the tensor \( \mathcal{B}^i_{ka\beta} \) we may observe that this tensor satisfies unusual identities of the form

\[
\mathcal{B}^i_{ia\beta} = \mathcal{B}^i_{k\alpha \beta} = \mathcal{B}^i_{o\alpha \beta} = \mathcal{B}^i_{o\gamma \beta} = 0.
\]

(12)

In view of the last set of identities (12) the equations (10) yield
\[ \Psi_{\mu \nu} \frac{\partial x^i}{\partial x^\mu} = Y^i_{\alpha \beta \gamma} \frac{\partial x^\alpha}{\partial x^\mu} \frac{\partial x^\beta}{\partial x^\nu} \frac{\partial x^\gamma}{\partial x^i} \] (all indices = 1, \ldots, \(n\))

where

\[ Y^i_{\alpha \beta \gamma} = \psi B^i_{\alpha \beta \gamma}. \] (all indices = 1, \ldots, \(n\))

Thus the functions \(Y^i_{\alpha \beta \gamma}\) constitute a tensor under the group \(\mathcal{G}\). Expansion of \(Y^i_{\alpha \beta \gamma}\) gives an expression of the form

\[
\frac{1}{n-2} \left\{ F^i_{\alpha \beta \gamma} + \delta^i_\beta F^\alpha_{\gamma} - \delta^i_\gamma F^\alpha_{\beta} + G^{ik}\left(F^\beta_{\gamma \beta} G^\alpha_{\alpha \gamma} - F^\gamma_{\alpha \gamma} G^\beta_{\beta \alpha}\right) + \frac{F}{n-1} (\delta^i_\beta G^\alpha_{\alpha \beta} - \delta^i_\gamma G^\beta_{\beta \gamma}) \right\}
\]

which is identical with Weyl's conformal curvature tensor \(R^i_{\alpha \beta \gamma} (n \geq 4)\) for which the indices have values (1, 2, \ldots, \(n\)). When \(n = 3\), the tensor \(Y^i_{\alpha \beta \gamma}\) vanishes and the equations (10) give

\[ \bar{Z}_{\alpha \beta \gamma} = Z_{\mu \nu} \frac{\partial x^\mu}{\partial x^\alpha} \frac{\partial x^\nu}{\partial x^\beta} \frac{\partial x^\xi}{\partial x^\gamma} \] (all indices = 1, 2, 3)

where

\[ Z_{\mu \nu} = \psi B^\alpha_{\mu \nu}. \] (all indices = 1, 2, 3)

Finally let us observe that functions \(P_{ik}\) may be defined by the matrix

\[
\begin{array}{cccccc}
0 & 1 & \ldots & n & \infty \\
0 & 0 & 0 & \ldots & 0 & -1 \\
1 & 0 & G_{11} & \ldots & G_{1n} & 0 \\
\vdots & \vdots & \vdots & \ddots & \vdots & \vdots \\
n & 0 & G_{n1} & \ldots & G_{nn} & 0 \\
\infty & \infty & \infty & \infty & \infty & \infty \\
\end{array}
\]

so that we have

\[ \bar{P}_{ik} = (xx) \frac{2}{n} P_{ik} \frac{\partial x^i}{\partial x^\xi} \frac{\partial x^k}{\partial x^\xi}. \]

Then when we put

\[ \psi B_{ik \alpha \beta} = P_{ij} \psi B^j_{k \alpha \beta}, \]
we obtain

\[ \bar{\omega}_{J^\mu} = (x^x)^{-2} \bar{\omega} B_{\alpha \beta \rho} \frac{\partial x^\alpha}{\partial x^\xi} \frac{\partial x^\beta}{\partial x^\eta} \frac{\partial x^\rho}{\partial x^\nu} \]

The tensor \( \bar{\omega}_{J^\mu} \) is the covariant form of the conformal curvature tensor \( \bar{\omega}_{k\alpha \beta} \) (\( n \geq 3 \)).

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1 These Proceedings, 11, pp. 722–725, 1925.
2 See these Proceedings, 11, pp. 588–589, 1925.
3 J. reine angew. Math. (Crelle) 70, pp. 46–70, 1869.
4 These Proceedings, 11, pp. 257–259, 1925.
5 The idea of using a type of invariant which does not transform by the tensor law is already to be found in the paper by O. Veblen and J. M. Thomas in these Proceedings, 11, pp. 204–207, 1925.

CONCERNING INDECOMPOSABLE CONTINUA AND CONTINUA WHICH CONTAIN NO SUBSETS THAT SEPARATE THE PLANE

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In my paper on the most general class \( L \) of Frechet in which the Heine-Borel-Lebesgue theorem holds true\(^1\) I showed that in order that that theorem should hold true in a given class of \( S \) of Frechet it is necessary and sufficient that for every monotonic family of closed and compact point sets in \( S \) there should exist at least one point common to all the sets of that family. I call a space \( S \) in which this condition is fulfilled a space \( S^* \). By an argument closely analogous\(^4\) to the one given in the last paragraph of § 1, on page 209 of my paper, S. Saks has proved\(^2\) the following lemma for every space \( S \) in which the Heine-Borel-Lebesgue theorem holds true. From these two results it follows that this lemma is true as stated below, that is to say for every space \( S^* \).

**LEMMA 1.**\(^3\) If, in a space \( S^* \), \( G \) is a family of closed and compact point sets and for every finite subfamily of \( G \) there exists at least one point common to all the members of that subfamily then the point sets of the family \( G \) have at least one point in common.

**LEMMA 2.** If, in a regular\(^4\) space \( S^* \), \( G \) is a family of compact continua and, for every finite subfamily of \( G \), the common part of all the continua of that subfamily is a continuum then the common part of all the continua of \( G \) is a continuum.