a metrically *convex* Boolean metric space over a Boolean algebra that contains the original one as a sub-algebra. The congruence is, in fact, an isomorphism, and since metric convexity of B is easily seen to be equivalent to lack of atoms in the underlying algebra, it follows that every Boolean algebra may be embedded isomorphically in an atom-free Boolean algebra. Assuming from now on that B is atom-free (metrically convex) and lattice-complete, concepts involving continuity, based on the introduction of the Birkhoff-Kantorovich order topology (sequential or directed set) are defined. It is seen that B is also metrically complete. Arcs are defined as homeomorphs of maximal chains. Since every motion (congruence of B with itself) is a homeomorphism and every congruence between any two subsets of B is extendible to a motion, segments are arcs. One seeks to determine what metric and topological properties of arcs and segments in ordinary metric spaces are valid in the very different environment provided by a Boolean metric space. Homeomorphisms between maximal chains with the same end-elements, connectedness properties of chains, characterizations of segments among arcs (by having a length equal to the distance of the end-elements, for example) are considered. A theory of continuous curves is also begun.

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BEMERKUNGEN ZUR HOMOTOPIETHEORIE

EWALD BURGER

Kleinere Bemerkungen über den Zusammenhang zwischen Homologie- und Homotopieinvarianten der Abbildungen eines n-dimensionalen Polyeders K in einen Raum, der in den Dimensionen $< n$ asphärisch ist, unter Benutzung der von Eilenberg-MacLane (Ann. of Math. 43 (1942)) gegebenen Beschreibung der Kohomologiegruppen von K durch die ganzzahligen Homologiegruppen.

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THE SPACE OF KÄHLER METRICS

EUGENIO CALABI

Let M^n be a closed, n-dimensional complex manifold. We assume that M^n admits at least one Kähler metric $g_{\alpha\beta^*}$; its associated closed exterior form $\omega = \sqrt{-1}\, g_{\alpha\beta^*}\, dz^\alpha \wedge dz^{\beta^*}$ determines a real cohomology class, called the principal class of the metric. Consider the space Ω of all infinitely differentiable

Kähler metrics in M^n with the same principal class; the topology of Ω is defined by the L^2 topology of the tensorial components of metrics in Ω in compact subregions of co-ordinate domains. If $R_{\alpha\beta^*}$ is the Ricci tensor of any metric in Ω, then the Ricci form $\sqrt{-1}\, R_{\alpha\beta^*}\, dz^\alpha \wedge dz^{\beta^*}$ is closed and its cohomology class is $2\pi C^{(1)}$ ($C^{(r)} = r$th Chern class).

Theorem 1. Given in M^n any real, closed, infinitely differentiable exterior form Σ of type (1, 1) and cohomologous to $2\pi C^{(1)}$, there exists exactly one Kähler metric in Ω whose Ricci form equals Σ.

The proof proceeds by joining the Ricci form of one metric in Ω with Σ by a differentiably parametrized arc in the same linear space of forms (for example by linear interpolation) and constructing a corresponding parametrized path in Ω, then by proving that it is unique, and that its terminal point is independent of the path.

One can introduce in Ω a generalized Riemannian structure by defining the metric form $ds^2 = \left(\frac{\partial \omega(t)}{\partial t}, \frac{\partial \omega(t)}{\partial t}\right) dt^2$, where $\omega(t)$ represents a differentiable path in Ω. One shows that between any two points in Ω there exists exactly one geodesic, that the topology induced by the geodesic distance coincides with the chosen one, and that Ω with this metric is isometric with a geodesically convex subset of a Hilbert sphere.

If $g_{\alpha\beta^*}$ belongs to Ω and Σ is its Ricci form, then (Σ, Σ) is stationary with respect to first order variations in Ω, if and only if the contravariant components of the gradient of the scalar curvature generate a group of complex analytic transformations of M^n. If M^n has the property that each one-parameter complex transformation group of M^n (if any exist) leaves no point fixed, or if it is the Gaussian sphere, then this implies that the scalar curvature is constant, that Σ is harmonic, and that (Σ, Σ) is minimized.

Theorem 2. If M^n has the restrictive property described above, then there exists a metric in Ω which minimizes (Σ, Σ), unique but for analytic transformations of M^n, and characterized by the property that the scalar curvature is constant.

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ON TWO DIMENSIONAL ASPHERICAL COMPLEXES

WILFRED HALLIDAY COCKCROFT

Let L be a connected two dimensional C. W. complex. Let K denote the complex $L \cup \{e_i^2\}$, where $\{e_i^2\}$, $i = 1, 2, \ldots$, is a set of 2-cells which are adjoined