ABSTRACT Is given a measurable space $\{\Omega, \mathcal{E}, m\}$. This space (ii) corresponds to the "metric structure, Boolean algebra $\hat{\mathcal{E}}$, the resulting algebra is factorization-$\sigma$ $\varepsilon$ According to maiprany negligible. This is a metric structure complete with $AB$ as $\hat{m}$ . Taking us a certain freedom, we apply the term to the metric structure of $ABN \{\hat{\mathcal{E}}, \hat{m}\}$ too. So, every metric structure associated with a metric space offers an example of $ABN$. As a result every $ABN$ can be represented in this form. We refer particularly to the Boolean izomorfisme; izomorfisme metric structures. However, the theory of measure uses another important concept of isomorphism between spaces. It happens in a few variations, but in all cases we are dealing with a "point" of a space on the other. Of the many definitions you choose only those that are really used in this part.

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1. THE STRUCTURE OF THE METRIC MEASURE SPACE
Is given a measurable space $\{\Omega, \mathcal{E}, m\}$. This space (ii) corresponds to the "metric structure, Boolean algebra $\hat{\mathcal{E}}$, the resulting algebra is factorization-$\sigma$ $\varepsilon$ According to maiprany negligible. This is a metric structure complete with $AB$ as $\hat{m}$ . Taking us a certain freedom, we apply the term to the metric structure of $ABN \{\hat{\mathcal{E}}, \hat{m}\}$ too. So, every metric structure associated with a metric space offers an example of $ABN$. As a result every $ABN$ can be represented in this form. Before you formulate a corresponding theorem we refer to the concept of isomorphism. We refer particularly to the Boolean izomorfisme; izomorfisme metric structures. However, the theory of measure uses another important concept of isomorphism between spaces. It happens in a few variations, but in all cases we are dealing with a "point" of a space on the other. Of the many definitions you choose only those that are really used in this part. Considering the two categories $\mathcal{E}$ and $\mathcal{F}$ whose elements are the spaces in the form of measures $\{\Omega, \mathcal{E}, m\}$. Morfisme of the first category are possible applications $\zeta : \Omega_1 \rightarrow \Omega_2$ with the following property:

a) $\zeta^{-1}(e) \in \mathcal{E}_1$ for any $e \in \mathcal{E}_2$

b) If $m_2 e = 0$ then $m_1 \zeta^{-1}(e) = 0$

If c) $m_1 \zeta^{-1}(e) = m_2 e$ for any $e \in \mathcal{E}_2$ (conservation measure) then $\zeta$ homomorfism is called...
a metric. These homomorphisms are taken as morphisms of category $\mathcal{C}$. In fact every object of category $\mathcal{C}$ is defined by the $\Omega$, algebra $\varepsilon$ and negligible ideal; quasimasura sets $m$ playing a supporting role. These two categories they correspond to two forms of izomorfisme. Later we will call an isomorphism between two measures of spaces $\{\Omega_1, \varepsilon_1, m_1\}$ and $\{\Omega_2, \varepsilon_2, m_2\}$ as part of his $\mathcal{C}$ an isomorphism of these spaces. Such an isomorphism is an application bijectiva $\zeta : \Omega_2 \rightarrow \Omega_1$ having its properties a) and b) with reverse aplicatiia $\zeta^{-1}$. Moreover, if $\zeta$ (question $\zeta^{-1}$) has the property c) then we call $\zeta$ an isomorphism metric. If there is an isomorphism between two measures of spaces then say that these spaces are izomorfice. Measure spaces are called izomorfice metric (izomorfice metric mod0). If we exclude some negligible, we get crowds izomorfice spaces. It is easy to notice that an isomorphism of spaces imply a corresponding Boolean structures metric isomorphism, izomorfismul and metric involves an isomorphism of Boolean algebras normed. The converse is not generally available but can be valid if successfully restrict our chathosts from well-conducted group spaces that we have considered.

**Theorem 8.** For every ABN $\{\xi, \mu\}$ there's a space masurabilbil $\{\Omega, \varepsilon, m\}$ so ABN $\{\xi, \mu\}$ si $\{\hat{\xi}, \hat{m}\}$ sunt izomorfice.

In other words, every ABN is izomorfic metric structures. We refer here to an isomorphism metric (measurement).

**Demonstration.**

We can use any of the three representations of proved the Loomis-Sikorski. The last two theorems are applicable, since every algebra is regular normata. According to one of these theorems, we can find ABN $\xi$, a space $\Omega$ an algebra $\sigma$ of poset $\varepsilon$ from $\Omega$, and a $\sigma$-ideal $I$ of this algebra, so that there is an isomorphism $\Phi$ the quotient algebra $\varepsilon|I$ on $\xi$. In this case, there is a measure $\mu$ on $\xi$; This makes it possible to define a quasimasuri additive numarabile $m$ on $\varepsilon$. According to the following conditions: $m(\varepsilon) = \mu(\Phi(\theta(\varepsilon)))$.

Here $\theta$ is a homomorphism $\sigma$. He became a Canon of $\varepsilon$ on $\varepsilon|I$. With key on $\mu$ positive $\xi$, we can set up easily as the ideal $I$ coinciding with negligible maiprany $m$, and $\Phi$ is an isomorphism necessary ABN $\{\varepsilon|I, \hat{m}\}$ on the ABN $\{\xi, \mu\}$. Primarily the role of the main space $\Omega$ play space Stone $\Omega(\xi)$; In the case of 2 and 3 main space is "standard", bound only by the value of $\xi$ but not of algebra itself. In other words we get $R$ the Cantor of the value $r(\xi)$; so lead to the production of $r(\xi)$ elements of the range $[0,1]$. Among the most interesting questions is the following: Why masurabilbil is the best place in terms of the representation of an ABN?
2 THE STONE OF AN ABN

We consider the Stone space $AB$ complete $\Omega \equiv \Omega(\xi)$. We will identify $\xi$ and $\xi^0 \equiv CO(\Omega)$. Every quasimasura $\mu_0$ on $\xi^0$ meet the Lebesgue Theorem hypothesis-Caratheodory and admits an extension of numarabila additive $\mu$ on algebras $\sigma$ $\epsilon = \epsilon_{\mu}$. If quasimasura $\mu_0$ It's actually a positive numarabila essential additive measure then this algebra may be described more in detail. We're now in this description. 1. remind you first of all that each lot matchless belongs to $\epsilon$. 2. Every quasimasura $\mu_0$ on $\xi^0$ meet the Lebesgue Theorem hypothesis-Caratheodory and admits an extension of numarabila additive $\mu$ on algebras $\sigma$ $\epsilon = \epsilon_{\mu}$. If quasimasura $\mu_0$ It's actually a positive numarabila essential additive measure then this algebra may be described more in detail.

We consider the open complementary $G = \Omega?\epsilon; \text{is represented as a semi-open crowds reunion}$

$$G = \bigcup_{t \in T} x_t, \quad x_t \in \xi \quad (t \in T) \quad (1)$$

Taking into account that $\epsilon$ then it is; $\vee_{t \in T} x_t = 1$. Our Algebra $\xi^0$ is normabila (since measure $\mu_0$ is available), therefore, meet the requirements of numarabil and the meeting can be represented as the smallest common sequences of Hamid Ibrahim:

$$1 = \vee_{n=1}^{\infty} x_{t_n} \quad (t_n \in T, n = 1, 2, ...).$$

We can assume that $x_{t_1} \leq x_{t_2} \leq ...$ Applying the additivity of numarabila $\mu_0$ This will result in $\mu_0 x_{t_n} \rightarrow \mu_0 1$. Atunci

$$\mu^* e \leq \mu^* \epsilon \leq \mu_0(C_{x_n}) = \mu_0 1 - \mu_0 x_{t_n} \rightarrow 0, \quad \mu^* e = 0, \quad e \in \epsilon_{\mu}. \quad (2)$$

2. Algebra $\xi^0$, as any normabila, algebra is regular, and thus sets a rare $\sigma$ ideal. They note with $I$ and consider the algebra $\sigma$ of maiprany

$$\Sigma \equiv \Sigma(\Omega) \equiv \Sigma'(\Omega). \quad (3)$$

This algebra $\sigma$ includes all crowds form $e = x_+ q, x \in \xi, q \in I$. It is clear that 1 we have

$$\Sigma \subset \epsilon \quad (4)$$

3. Of course a few extensions of numarabila additive $\mu_0$ exist in $\Sigma$. In other words, this is quasimasura $\mu' \equiv \mu_0 o U_{\Omega}$, where $U_{\Omega}$ is a homomorfism $\sigma$ Birkhoff-Ulam. Of positivity of his $\mu_0$ equality $\mu^* e = 0$ is equivalent to the $e \in \text{ker} U_{\Omega} = I$. Quasimasura $\mu'$ is complete, since the condition of $e' \subset e$ si $\mu^* e = 0$ involve $e' \in I$ and $e' \in \Sigma$.

4. Both quasimasurile $\mu$ and $\mu'$ numarabila are additive and complete when as $\mu_0$ is extended. Taking into account that $\mu$ is an extension of the Lebesgue measure, then, $\epsilon \subset \Sigma$ si $\mu' | \epsilon = \mu$. At the same time, we see that $\Sigma \subset \epsilon$.

5. So we mark the following conclusion. If $\xi^0$ is an ABN, $\mu_0$ It is a measure of the $\xi^0$, and $\mu$ is an extension of the Lebesgue

1) his field $\mu$ is algebra $\sigma$ $\Sigma(\Omega)$ includes all crowds form $x_+ q$, where $x \in \xi$ and $q$
are rare.
2) negligible sets $\mu$ There are even rare submultimile of compact space $\Omega$.

Therefore, all measures in $\xi^0$ extend the same algebra $\sigma$ with the same crowd negligible.

Application $x + s I \rightarrow x(x \in \xi)$ It is in this case izomorfismul $\Phi$ that is presented in the theorem 8, coefficient algebra izomorfismul $\sum |I|$ on $\xi \equiv \xi^0$. As I said above, this is an isomorphism in the ABN, since $\Phi$ is constant measurement:

$$\hat{\mu}(x + s I) = \mu(x + q) = \mu x = \mu_0 x. (5)$$

But if $\xi$ does not coincide with $\xi^0$ then $\Phi$ induces an isomorphism between $\xi$ and $\xi^0$.

Notice that each ABN $\{\xi, \mu\}$ is izomorfica metric spaces with structures $\{\Omega(\xi), \sum(\Omega(\xi)), \mu\}$.

Each isomorphism in the ABN $\{\xi, \mu\}$ and $\{\xi', \mu'\}$ induce a homomorphism between Stone spaces and an isomorphism between measures of space.

3. LEBESGUE SPACES-ROKHLIN

The Discontinuity Of The Cantor $\xi \equiv \xi_T$ can be used as a representation of a space ABN $\xi$, where $\text{card}T = r(\xi)$. Indeed, there is a $\sigma$ ideal $I$ the algebra of Baire space interrupted extremely compact $\xi$ and an isomorphism $\Phi$ coefficient algebra of $B_0 |I|$ on $\xi$. Let us remember that the algebra of Baire $B_0$ It is the most insignificant algebra $\sigma$ including algebra semideschisa $D_T$.

If his $\xi$ He is considered a measure $\mu$ then this measure "pass" in quasimasura $m$ in algebra $B_0$. According to the rule $me = \mu \Phi(e + s I)$. In this case $I = I_m$ ideal becomes exactly $\sigma$ ideal of negligible Baire maiprany $m$. The structure of the metric space measures $\{\xi, B_0, m\}$ It is in fact ABN $\{\xi, \mu\}$

We obtain the same metric structure if you replace $B_0$ with algebra $\sigma$ complete $B_m = B_0 + \tilde{I}_m$, where $\tilde{I}_m$ includes all related elements of crowds $I_m$ ideal. "Measure " $m$ expands on the $B_m$ just like izomorfismul $\Phi$. This representation has the special features as a result of the exceptional role of algebra $D_T$. This algebra has the following properties:

1) Each non-empty crowds centered in $D_T$ has the nevida intersection. It is obvious because $D_T$ consists of the compact crowd.
2) Each lot in $B_m$ is mod0 with the crowd in algebra $\sigma$ generated by $D_T$. This means

...
there is a standard extension to quasimasurii \( m \mid D_T \) .

3) \( D_T \) separate the original space points. The property is called the compactitudine of algebra \( D_T \). Its properties 2 and 3 by definition means that \( D_T \) is a basis of \( \{ \xi, B_m, m \} \).

In the case of some measurable space \( \{ \Omega, \varepsilon, m \} \) subalgebra \( \varepsilon_0 \subset \varepsilon \) It is also called a compact if its properties owns the 1,2 and 3 (of course replacing \( \xi \) and \( D_T \) with \( \Omega \) question \( \varepsilon_0 \) ).

A space masurabilbil \( \{ \Omega, \varepsilon, m \} \) with a full size \( m \) It is called Lebesgue space-Rokhlin has a compact if numarabila. theory of these places is completely developed by V.A.Rokhlin in 1940; he called "Lebesgue spaces".We note the Lebesgue space-with Rokhlin \( \Omega \).

From what I said at the beginning of this chapter, shall be deducted for each ABN separabila represents the structure of a metric space Lebesgue-Rokhlin.Because the database structure numarabilitatii of a Lebesgue space metric-Rokhlin will always be separabila.We will not submit this theory of space in detail

As a consequence \( m \) is supposed to be a measure of probability, \( m \Omega = 1 \).

Either \( \{ \Omega_i, \varepsilon, m_i \} \) \( (i = 1, 2) \) two Lebesgue spaces-Rokhlin. everyone has meant most number of atoms.Taking into consideration the crowds zero for maintaining a general lines, we'll list the crowds in descending order.Either \( \{ m^1, m_2, ..., m^i \} \) and \( \{ m^2, m_2, ..., m^i \} \) crowd in \( \Omega_i \) and that \( \Omega_2 \) where \( m^1_i \geq m^2_i \geq ... (i = 1, 2) \). It turns out that this crowd is meeting the invariance image allows us to classify Lebesgue spaces-Rokhlin metric.Namely,

1) If \( m^i_k = 0 \) for any \( i \) and \( k \) then izomorfice metric spaces are, In this case izomorfice metric metric structures are also what is obvious.

2) If \( m^k_i = m^k_i \) for any \( k = 1, 2, ..., \) then the spaces \( \{ \Omega_i, \varepsilon, m_i \} \) and \( \{ \Omega_i, \varepsilon^2, m_i \} \) are metric izomorfice mod0 and their structures are izomorfice metric metric.

3) If the metric izomorfice metric structures are then \( m^k_i = m^k_i \) for any \( k = 1, 2, ..., \) and izomorfice metric spaces are mod0.

The proof of this theorem to "classification" is feasible.For example monografia of V.G.Vinokurov, see B.A.Rubshtein and A.L.Fedorov.

Result from this theorem as Lebesgue spaces-izomorfice metric metric structures with Rokhlin are izomorfice mod0 and if these structures are continuous ("nonatomiice") then there is an isomorphism between these "pure" Lebesgue spaces-Rokhlin. Izomorfica classification of Lebesgue spaces-Rokhlin is equivalent to the classification of ABN. A subspatiu of a measurable space \( \{ \Omega, \varepsilon, m \} \) It is a space masurabilbil \( \{ E, \varepsilon, m_e \} \) where \( E \in \varepsilon, mE > 0 \) si \( m_e = m \mid \varepsilon_e \). If \( m_e = m_\Omega \) then both spaces have the same metric structure and more
specifically, there is a canonical isomorphism \( \{ \hat{e}, \hat{m} \} \) on \( \{ \hat{e}, \hat{m}_l \} \) generated by the application \( e \rightarrow e \cap E \) \( (e \in \varepsilon) \). Note all the fundamental things just now: a subspatiu of a Lebesgue space-Rokhlin is also Lebesgue space-Rokhlin. Sometimes the concept of subspatiu is interpreted in a wider sense without it is assumed that \( E \) is measurable. So if the \( m' E = m \Omega \) but \( E \not\in \varepsilon \) then you can still have \( E \) in a measurable space and even more so, with the same metric structure but in any Lebesgue space-Rokhlin will not be produced. It is clear that every space \( \{ \Omega, \varepsilon, m \} \) a Lebesgue space isomorphic-Rokhlin is also Lebesgue space-Rokhlin. If we limit the majority of continuous cardinalitatea will happen the same with izomorfismele mod0. so the Lebesgue spaces-Rokhlin category is "well built" as a whole. Lebesgue spaces-Rokhlin comprise a category well built "but are also remarkable in terms of intrinsic structures. Now we will show the main examples. We'll start with the case of the Lebesgue spaces continuously-Rokhlin are izomorfe to each other. In fact, one example has already been displayed; it's the Bernoulli \( \{ \xi_N, \varepsilon_{pq}, \beta_{pq} \} \). We prefer if \( p = q = \frac{1}{2} \) and abbreviated writing \( \varepsilon_{\frac{1}{2}} \equiv \varepsilon \) and \( \beta_{\frac{1}{2}} \equiv \beta \). The compact numarabila we can take semideschisa algebra \( D_N \). The existence of such databases involves exactly the fact that space is a Lebesgue space Bernoulli-Rokhlin. Am remember already that points maiprany missing; Therefore, our example is the Example of a Lebesgue space-Rokhlin., and each of these areas must be isomorphic Bernoulli. In particular space, all Bernoulli spaces built on \( \xi_N \) discontinuous are metric izomorf. A second example of Lebesgue space-Rokhlin is Lebesgue space \( \{ I^n, \varepsilon_{1(n)}, l \} \), where \( I^n \) is the n-dimensional cube. In previous chapters we have described the \( \psi : \xi_N \rightarrow [0,1] \) by the formula: \( \psi(x) = \sum_{n=1}^{\infty} \frac{\xi}{n} \).

Similar applications can be constructed in the square \([0,1] \times [0,1] \), the cube, etc. All are "almost" bijective and continuous, during the process of "measure" Bernoulli \( \beta = \beta_{\frac{1}{2}} \) in Lebesgue measure: \( l(\psi(e)) = \beta(e) \).

Application \( \psi \) It is not bijectiva to items \( \xi_N \) of the form \( (x_1, x_2, \ldots, x_n, 0, 0, \ldots) \) and \( (x_1, x_2, \ldots, x_n, 1, 1, \ldots) \) which corresponds to the rational points of the interval binaries. They form a lot S numarabila, and its image \( \psi(S) \) includes all rational points of the interval binaries. Let \( \omega \) a bijectie some of S on \( \psi(S) \) (both of them are zealous and numarabile). Application \( \bar{\psi} \) the date of

\[
\bar{\psi}(\xi) = \begin{cases} 
\psi(\xi), & x \notin S \\
\omega(\xi), & x \in S 
\end{cases} \quad (6)
\]
is an isomorphism of Bernoulli's range of Lebesgue space. This Lebesgue interval that is Lebesgue space-and every Lebesgue space Rokhlin-Rokhlin continuously is isomorphic to it. The same thing is true for squares, cubes, etc. Lebesgue. gotta call it as the best example for a Lebesgue space-continuous Rokhlin is simply the square Lebesgue. A Lebesgue space-Rokhlin differently is represented simply as a numerabila or finite group points to the component $m_1, m_2$. An example of another type of interval $[a, b]$ with a group of distinct points $x_1, x_2$ to which extent is entirely supported. Coincidence of corresponding maiprany elements involved, an isomorphism mod 0; but no genuine isomorphism is not possible, since these areas have different cardinalita and do not allow any bijection.

Finally, most general example of Lebesgue space-Rokhlin is the interval or Lebesgue square (or Bernoulli space) with the most numerabila lot of points associated with it. Every Lebesgue space-Rokhlin is isomorphic metric mod 0 such an "example" of space. To simplify the exposition, this is often taken as the basis for the definition of the Lebesgue space-Rohen.

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