## Der Satz von Luzin

Auf ednen bogologischen Roum hat mon an nativilier Levre edne 5-Algebor gegeleen.

## Definition:

Sei (X, T) logologischer Roum. De kleinte 5-Algebra des Tunforst heim de Vorel - 6-Algebra, und ihre Elemente heinen Vorel mengen. Edn porthier Mont door omf der Josel - 6-Algebra definient int, und Jeder honzelter trenge endeider Mont zuweist, heim Vorel mon ?.

En Boelwar plust reguloir, wem for jude Doelmenge B gelt dans

M(A) = sy {M(O) | O offen, 02B}

= and {p(k) | K hounded, K = B }.

## Sate (N.N. Luzin):

Sei (X,3) kongraht und  $(T_2)$ , und  $\mu$  et regulaires Borelmont and X. Down gell

+ f: X -> IR Borel - mellion + <>0

3 g ∈ C(X, IR). μ({xeX | +(n) + g(n) }) < C

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D Wer leehorden des Behoirdonstelling reeller Zahlen: Ein Seder 66 R 20lf

Eir Sedes to R golf

$$t = \lfloor t \rfloor + \sum_{n=1}^{\infty} \beta_n(t) \cdot \frac{1}{2^n}$$

wolse LtJ due grade gourse Bohl &t leerendemed und

Cone Emblem f: X-> IR low coch also dontellen och

$$f(x) = \lfloor f(x) \rfloor + \sum_{n=1}^{\infty} (N_n \circ f)(x) \frac{1}{2^n}$$

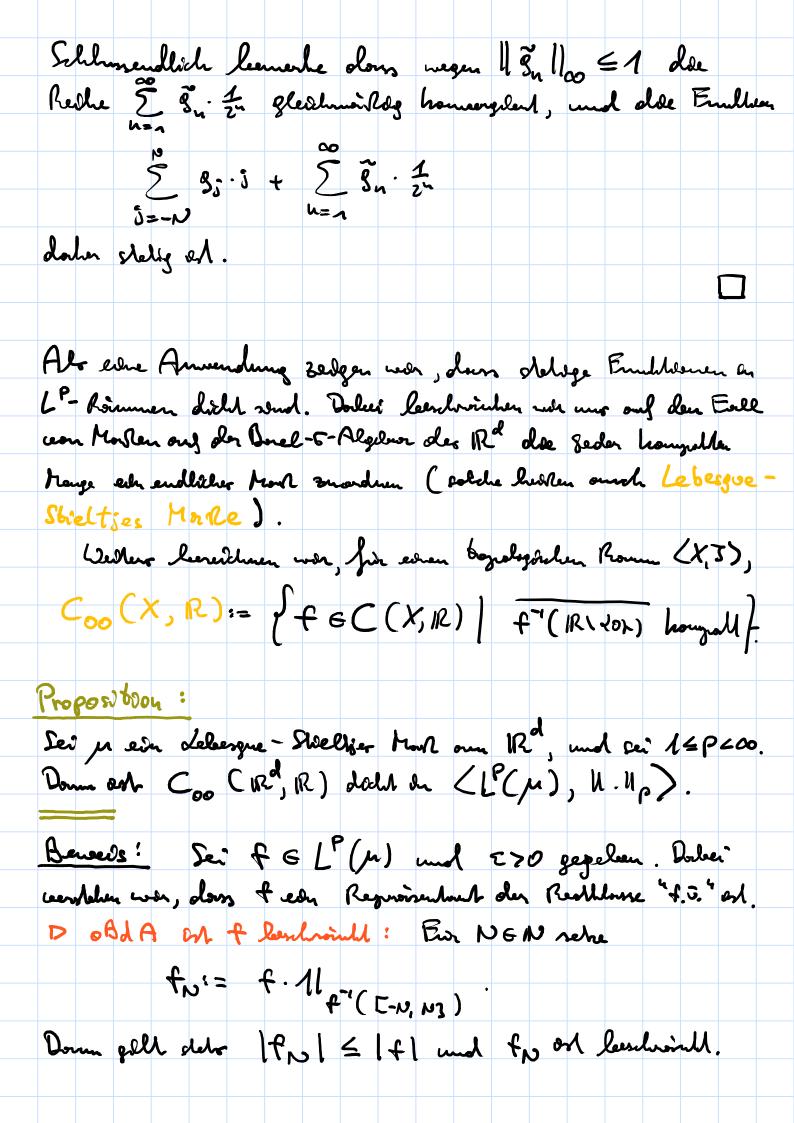
$$= \sum_{i \in \mathbb{Z}} \mathcal{A}_{i}(E_{i},\delta+n))^{(x)} + \sum_{n=n}^{\infty} \mathcal{A}_{i}(\theta_{n})^{(x)} \cdot \frac{1}{2^{n}}$$

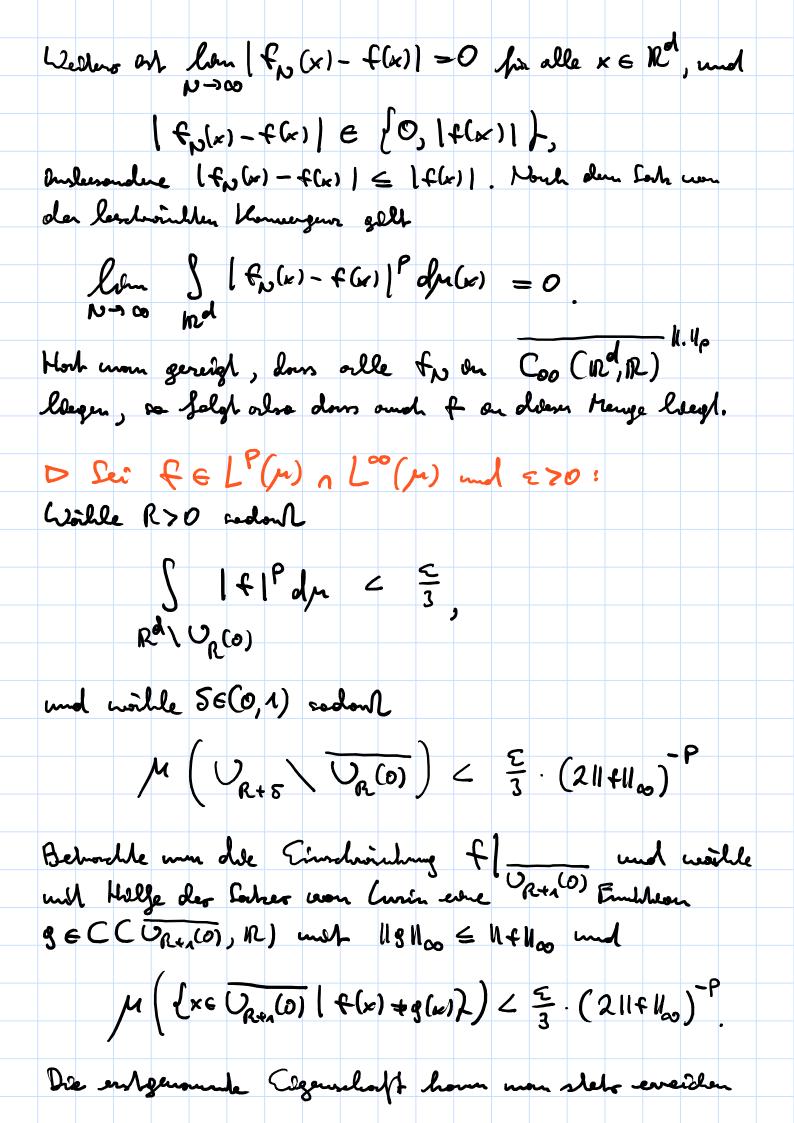
Beville bier, dons in der enter sume genon ein humand cershileden non Mull est.

D Sei f: X-> IR Boyel-mellhour und E>0 gegeloon;

Er ort 
$$\mu(X) < \infty$$
 and  $\bigcap f'(R \setminus EN, N+1)) = \emptyset$ .  
Also gelt New

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And  $U_{R(0)}$  gell  $h(\kappa) = g(\kappa)$ , and doubt [ | f-h | P du = (2 | | f | loo) M ( x = (2 (6) | f 6) + 9 (6) }  $\angle (2\|f\|_{\infty})^{p} \cdot \frac{c}{3} (2\|f\|_{\infty})^{-1} = \frac{c}{3}$ Bedom zweilen Cumanden word über eine beleine Menge entegnent: S | f-h 1 dμ ≤ (24 μω). μ (υρ+σ(ο) \ υρ(ο))  $\angle (2 \| f \|_{\infty})^{\rho} \cdot \frac{\zeta}{3} (2 \| f \|_{\infty})^{-\rho} = \frac{\zeta}{3}$ Ausserhalle van  $\mathcal{O}_{R+\delta}(\Theta)$  ook h=0, and so folgh  $\int |f-h|^p d\mu = \int |f|^p d\mu < \frac{\pi}{3}.$   $|V_{R+5}(0)| \qquad |R^d| V_{R+5}(0)$ Ensonmengenommen Soly SIF-hIPdy < E.