Some property of Fourier series with respect by orthogonal systems

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We will discuss about unconditional and absolute convergence of Fourier series with respect by orthogonal systems.

Definition. The basis $\{\varphi_n(x)\}_{n=1}^{\infty}$ of $C[0,1]$ space is called has (D^{∞}) property if for any measurable set $E \subset [0,1], |E| > 0$ and condensation point x_0 there exists a continuous function $f_0(x)$ such that Fourier series any bounded function g(x), which coincides with f_0 on set E, absolutely diverges in point x_0.

Theorem 1. The Haar system have (D^{∞}) property.

Theorem 2. The Franklin system have (D^{∞}) property.

From M.Grigoryan and T.Grigoryan paper follow that the Faber-Schauder system haven't (D^{∞}) property.