

Department of Mathematics, Statistics and Computer Science



St. Francis Xavier University



presents

Mean Value Bounded Variation Condition and Applications in Fourier Analysis

by

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Chaundy and Jolliffe in 1916 proved if $\{a_n\}$ is a non-increasing (monotonic) real sequence with $\lim_{n \rightarrow \infty} a_n = 0$, then the necessary and sufficient condition of the uniform convergence of the series $\sum_{n=1}^{\infty} a_n \sin nx$ is $\lim_{n \rightarrow \infty} na_n = 0$. Since then, many conditions such as quasi-monotone condition, O-regular quasi-monotone condition, rest bounded variation condition, group bounded variation condition, non-onesided bounded variation condition, have been introduced to replace the monotone condition on $\{a_n\}$, while the result of Chaundy and Jolliffe keeps true. We generalize the monotone condition on $\{a_n\}$ in the result of Chaundy and Jolliffe to the so-called mean value bounded variation condition (MVBV), which is weaker than all the conditions mentioned above and is the best possible condition we can have to keep the result true. MVBV condition has many applications in generalizing other results in Fourier analysis and approximation theory.

Coffee and Donuts will be served before the talk in AX24A