Energy conservation

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Function decomposition: discrete form:

any time function, $f(t)$, with a period $2p$, we have

$$f(t) = \frac{1}{2}a_0 + \sum_{n=1}^{\infty}\{a_n cos(\frac{n\pi t}{p}) + b_n sin(\frac{n\pi t}{p})\}$$

Energy conservation:

$$\int_0^{2p} f^2(t)dt = \frac{1}{2}a_0^2 p + p\sum_{n=1}^{\infty}(a_n^2 + b_n^2)$$

Parseval's equality:

An alternative method to calculate $\int_0^{2p} f^2(t)dt$ is available since a_n and b_n decay quickly.

【存檔：c:/ctex/course/math2/conv1.te】【建檔:Mar./3/'97】