

程式 47 Radiation modes and radiation efficiency

1. 討論一彈性圓柱結構物浸於一均質聲場的介質中，此圓柱體受力後其輻射效率及輻射模態。
2. 找到 radiation operator G .

$$u = Gt$$

對 G 做 SVD 分解 $G = \Phi \Sigma \Psi^T$, $G \mathbf{j}_i = \mathbf{s}_i \mathbf{f}_i$

其中

\mathbf{f}_i 為 generalized radiation modes of the field.

\mathbf{j}_i 為 generalized radiation modes of surface source strength.

3. 利用退化核函數

$$U^i(\mathbf{q}) = \sum_{n=-\infty}^{\infty} \frac{P}{2} [-iJ_n(kR) + Y_n(kR)] J_n(kr) \cos(nq), R > r$$

使用離散系統及連續系統，找出 \mathbf{j}_i 、 \mathbf{f}_i 、 \mathbf{s}_i 與上式退化核函數的關係為何？
輻射效率與奇異直 \mathbf{s}_i^2 的關係為何？

4. 以圓形的 \mathbf{j}_i 為基底建構出長方形的 \mathbf{j}_s , \mathbf{j}_s 為長方形的輻射模態。

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