【中興大學生物力學實驗室研究成果】
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計畫名稱	Fractal dimension of oscillatory phenomena in nature
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摘要	Oscillatory phenomena are frequently observed in nature and spectrum analysis is typically used for analyzing it. Here, I propose to use fractal dimension analysis (FDA) to quantify the “turning” of time-series variables from oscillatory phenomena. FDA has been employed in the analysis for signal processing, stock index, etc. Previous study shows that, for example, FDA can be used to compare the heart beats of healthy and diseased hearts. It is suggested that fractal dimension could be an indicator to distinguish healthy or diseased hearts. In our lab, oscillatory motion has also been observed in flapping pectoral fins in paradise fishes and flapping wings in dragonflies. By employing Fourier analysis, some properties of flapping of pectoral fins have been characterized; however, using FDA provides a brand new perspective to quantify the stability of flapping behaviors. In this study, therefore, I propose to employ FDA to analyze oscillatory phenomena in biological systems, using flapping fins and wings as model systems.