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[54] **APPARATUS AND METHOD FOR PREDICTING FLOW CHARACTERISTICS**

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[52] **U.S. Cl.** **73/147**

[58] **Field of Search** 73/147, 861.22, 73/861.23, 861.24, 195, 196; 137/804

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[57] **ABSTRACT**

A method and apparatus for predicting flow over an object such as an air foil or hydrofoil. The vortex strength for each of a plurality of vortex segments is obtained over an area of interest. The vortex segments are grouped into a series of square area defined by a series of boxes having different sizes. Initially a vortex strength is established for each of the smallest boxes and the coefficients then provide characteristic vortex strengths for a given box. The conversion of these vortex strengths into velocities is accomplished by directly computing the velocity of a given vorticity segment as influenced by all the vorticity segments in the box containing the given vorticity segment and the direct influence of each vortex segment in that box and any neighboring boxes. The influence of other vorticity segments outside the neighboring boxes is provided by using the influence of the average vortex strength of a given box or group of boxes. This approach significantly reduces the number of computations required to obtain the prediction.

16 Claims, 6 Drawing Sheets