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IMPACT LOADS ON AIRCRAFT FUSELAGES DURING DITCHING IN WAVES

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Impact loads on the fuselage that occur during ditching processes of aircrafts are an important issue in aircraft engineering. In order to predict reliable loads on the fuselage during the water impact the 2D+t simulation method *ditch* has been developed [1].

Emergency landings are only done on water if no acceptable area on land is reachable. One of the areas where many flight routes are crossing big water plains is the Atlantic Ocean, which is why present investigations are concerned with ditching in seaways. First of all, typical parameters that describe the water surface of the ocean are extracted from global seaways statistics [2]. With the help of these parameters the implemented numerical wave model can be adjusted in a way that the oceanic seaway is approximated by up to 30 superposed third order stokes waves. These waves differ in wave length, amplitude, wave speed and phase such that typical deep water waves of the Atlantic Ocean, with its long flat troughs and short crests, can be described. Additionally to nonlinear analysis, linear shallow water waves can be handled [3]. The first impact on waves can either occur on the crest, the through, at the front or the back of a wave. Besides, the direction of aircraft can agree or disagree with travelling direction of waves. In order to find the best possible point on a wave for ditching, the scenarios are simulated and compared with respect to the acting loads.

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