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**Simulation of Collection Efficiency on Airfoil Profiles Using Different Particle Tracking Methods** KHALED YASSIN, ForWind, University of Oldenburg, Germany, BERNHARD STOEVESANDT, Fraunhofer IWES, Oldenburg, Germany , JOACHIM PEINKE, ForWind, University of Oldenburg, Germany — In many aerodynamic applications, wind turbines and aircraft for example, airfoil profiles are exposed to airflow carrying water particles. The key parameter that influences the accuracy of simulation of phenomena occurring on the surface of the aerodynamic bodies, ice accretion, for instance, is collection efficiency. This work aims to simulate water particles impinging on airfoil profiles and collection efficiency distribution over the profiles using Lagrangian and Eulerian particle tracking. After simulating water droplets impingement, the accuracy of collection efficiency and computational time are compared to show the advantages and disadvantages of each method. The simulations are done using an in-house code developed within the OpenFOAM framework to simulate background flow and particle tracking. After that, simulation cases, the resulting collection efficiency distribution will be validated with values resulting from wind tunnel experiments available in many published literature.

Khaled Yassin
ForWind, University of Oldenburg

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