

Abstract Submitted  
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**Direct Numerical Simulations of the Flow around a Golf Ball:  
Effect of Rotation** CLINTON SMITH, Arizona State University, NIKOLAOS  
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— Golf ball flight is affected by rotation of the ball (lift generation) and dimpling  
on the surface (drag reduction). Direct Numerical Simulation (DNS) is being devel-  
oped for the flow around a rotating golf ball using an immersed boundary method.  
Adding to the computational cost is that the moving body must be re-located as the  
ball rotates. In the present effort, interface-tracking of the moving body is optimized  
using the Approximate Nearest Neighbor (ANN) approach. The code is parallelized  
using domain decomposition and message passing interface (MPI), and parallel per-  
formance results are presented for a range of grid sizes. Results are presented from  
a series of validation cases for flow over a smooth sphere and a golf ball.

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