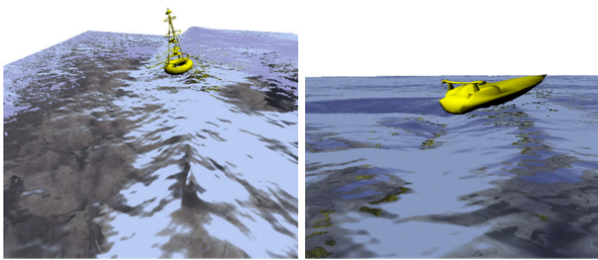


Hybrid Particle Lattice Boltzmann Shallow Water for Interactive Fluid Simulations

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We introduce a hybrid approach for the simulation of fluids based in the Lattice Boltzmann Method for Shallow Waters and particle systems. Our modified LBM Shallow Waters can handle arbitrary underlying terrain and arbitrary fluid depth. It also introduces a novel and simplified method of tracking dry-wet regions. Dynamic rigid bodies are also included in our simulations using a two-way coupling. Certain features of the simulation that the LBM can not handle, as breaking waves, are detected and automatically turned into splash particles. Albeit we use a simple ballistic particle system, our hybrid method can handle more

complex systems as SPH. Both the LBM and particle systems are implemented in CUDA, yet dynamic rigid bodies are simulated in CPU. We show the effectiveness of our method with various examples which achieve real-time on commodity hardware.