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Development of high per A. Tasora Diportiment

(*GPU*, contact-parallel) Contact preprocessing kernel. For each contact, given contact normal and position, compute in-place the matrices  $\mathbf{D}_{i,v_A}^T$ ,  $\mathbf{D}_{i,\omega_A}^T$  and  $\mathbf{D}_{i,\omega_B}^T$ , then compute  $\eta_i$  and the contact residual  $\mathbf{b}_i = \{\frac{1}{\hbar} \Phi_i(\mathbf{q}), 0, 0\}^T$ .

## 5

(GPU, body-parallel) CCP force kernel. For each body j, initialize body velocities:  $\mathbf{\dot{r}}_{j}^{(l+1)} = h m_{j}^{-1} \mathbf{F}_{j}$  and  $\omega_{i}^{(l+1)} = h \mathbf{J}_{j}^{-1} \mathbf{C}_{j}$ .































































