

Movie 1: Leapfrog motion of two capsules in a reference frame centered on  $C_1$  ( $X_1^{(0)}/a = -10, X_2^{(0)} = 0, X_3^{(0)} = 0, Ca = 0.3$ ).

Movie 2: Minuet of two capsules in a reference frame centered on  $C_1$  ( $X_1^{(0)}/a = -2.6, X_2^{(0)} = 0, X_3^{(0)}/a = -2.6, Ca = 0.3$ ).

Movie 3: Minuet with multiple reversals in a reference frame centered on  $C_1$  ( $X_1^{(0)}/a = -2.6, X_2^{(0)} = 0, X_3^{(0)}/a = -2.6, Ca = 0.2$ ).

Movie 4: Minuet with multiple reversals in the laboratory reference frame ( $X_1^{(0)}/a = -2.6, X_2^{(0)} = 0, X_3^{(0)}/a = -2.6, Ca = 0.2$ ).