Bemerkung 4.2: Beispiel Arenstorf-Orbit

Beispiel   Beschränktes Drei-Körper-Problem (Arenstorf-Orbit)

Bewegungsgleichungen

$$y_1''(t) = y_1 + 2y_2' - \overline{\mu}\frac{y_1 + \mu}{D_1} - \mu\frac{y_1 - \overline{\mu}}{D_2},$$

$$y_2''(t) = y_2 - 2y_1' - \overline{\mu}\frac{y_2}{D_1} - \mu\frac{y_2}{D_2},$$

$$D_1 = ((y_1 + \mu)^2 + y_2^2)^{3/2}, \quad D_2 = ((y_1 - \overline{\mu})^2 + y_2^2)^{3/2},$$

$$\mu = 0.012277471, \quad \overline{\mu} = 1 - \mu.$$

Anfangswerte

$$y_1(0) = 0.994, \quad y_1'(0) = 0, \quad y_2(0) = 0,$$

$$y_2'(0) = -2.0015851063790855224,$$

$$t_e = 17.0652165601579625889.$$