Addendum-Erratum to *Dissipative Systems Analysis and Control*, 2nd Edition

(the first figure indicates the page number)

- 17, 18, 28: line 2 after (2.22), and also in (2.24), (2.29), (2.30), line 3 in the equation above (2.75): change $u_T(t)$ to $u_t(\tau)$, and $u_T(j\omega)$ to $u_t(j\omega)$.
- 17: line 8, the integration is done over $\tau \in [0, t]$
- 81, Lemma 3.11: $\mu_{\min}(A)$ denotes the minimum eigenvalue of the symmetrized matrix $\frac{1}{2}(A + A^T)$.
- 81: $\sigma_{\min}(B) > 0$ is equivalent to $\mathrm{Ker}(B) = \{0\}$, and to $m < n$ and B of full rank m.
- 81, last line: it is $H(j\omega - \mu)$, not $T(j\omega - \mu)$
- 89 line 6: it is $H(j\omega)$, not $T(j\omega)$
- 88, line -3: it is $H(j\omega)$, not $T(j\omega)$
- 101: in the framed set of implications/equivalences, the last implication has to be reversed and in the last line this is $P = P^T \geq 0$ (hence the last condition is really sufficient for PRness as indicated in the paragraph in between the two framed sets.
- 119: in (3.134) it is $\frac{\partial V_f}{\partial x}(x)[Ax + Bu] + w(x, u) \geq 0$
- 121, line 5 after remark 3.38: Thus $H(-j\omega, j\omega)$ is the condition....
- 123, left hand side of (3.148): P is G
- 124, line 2: P is G
- 147, example 3.75: it is $Ax = 0$ if $x < 0$. The notation x^+ means $\max(0, x)$.
- 167, in Remark 3.96 this is $[0, \infty)$ (see Theorem 3.91)
- 170, about the Popov's line. In the book by Aiserman and Gantmacher from 1965 it is pointed outy that Popov criterion also holds in the case of a negative slope $\frac{1}{r}$.
- 192, in (4.18) all T are t
- 204, Theorem 4.43: It is supposed that there exists a storage function $V(\cdot)$ such that $V(x^\star) = 0$, so that $V_r(x^\star) = 0$. From the definition of the required supply in Definition 4.36, this also assumes that the system is reachable from $x^\star$. This is Theorem 2 in [510].
- 202: more on reversibility and its relationship with reciprocity, for LTI systems, is in [511,sections 8 and 9]. In particular Theorem 8 of [51] provides a way to check reversibility.
- 230 and 116: Lemma 3.36 page 116, and Lemma 4.91 page 230, are taken from the book referenced 145 by Faurre, Clerget and Germain. In fact Lemma 3.36 is presented in the book by Faurre et al as a corollary of Lemma 4.91.
- 230, Lemma 4.91: in (4.94) this is $V(t, x)$.
- 248 and 249, replace all (4.108) by (4.163)
- 251, Theorem 4.111, line 2: $\mathbb{R}^{m \times m}$

- 267: from Lemma 5.13 and Corollary 3.4 it may be deduced that the solutions $P = P^T$ of the KYP Lemma LMI, are > 0 if (C, A) is observable.
- 298: in Theorem 5.68, this is "...with input $u(\cdot)$..."
- 305: line before section 5.9.4: Bounded
- 306: Theorem 5.71 is taken from M.R. James et al, SIAM J. Control Optimization, vol.43, no 5, pp.1535-1582, 2005.
- 366: generally speaking BV functions do not satisfy that for any t, there exists a σ such the function is continuous on $[t, t+\sigma)$. This is because at t a BV function may possess an accumulation of jumps on the left, and an accumulation of jumps on the right. But in mechanical systems with frictionless unilateral constraints and piecewise analytic data, accumulations of impacts on the right do not exist (result of Ballard in 2000). So in this particular case the generalized velocity has this property.
- 368: line -8, it is $-\partial\psi_V(x)$.
- 382: ξ in the line after (7.10) refers to the ξ in (6.184)
- section 3.9.4: Notice that for a maximal monotone operator $F : I\!R^n \rightarrow I\!R^n$, $x \mapsto y = F(x)$, with $F = \partial f$ where $f(\cdot)$ is convex, proper, lower semi continuous, then the "input-output" product satisfies $x^T y = f(x) + f^*(y)$, where $f^*(\cdot)$ is the dual function of $f(\cdot)$.
- 409: CTCE means Cross Terms Cancellation Equality
- 431 line 2 section 7.8.3: (6.162) is (6.156), and λ_{z_1} is as in (6.169)
- 133, line -2 before (3.176): P_e
- 426, line 6: actuator dynamics
- 431, line 1, (7.169): λ_{z_d} is λ_d
- 564, reference [470]: 1992