Errata for
Applications of Polynomial Systems
May 15, 2025

Page 8, line −2: "1892" should be "1907"

Page 47: Starting from the line following (2.2) to the line before **Numerical Algebraic Geometry**, there are multiple errors. This material needs to be replaced with the following:

For $c = 2.1 = 21/10$ and $c = 2.01 = 201/100$, a lex Gröbner basis with $\lambda > x > y > z$ still consists of eight polynomials, where $g_8 = g_8(z)$ eliminates all variables but z. A surprise is that g_8 has degree 11 for these new values of c, while g_8 had degree 7 for $c = 2$. The following table shows the roots of g_8 for $c = 2, 2.1, 2.01$ to four decimal places:

c	first seven roots of g_8				four new roots
2	0	± 1	$\pm 2/3$ $= \pm .6667$	$\pm\sqrt{11}/(8\sqrt{2})$ $= \pm .2932$	
2.1	0	± 1	$\pm .6696$	$\pm .3088$	$\pm 5.0187\sqrt{-1},\ \pm .9965$
2.01	0	± 1	$\pm .6671$	$\pm .2948$	$\pm 47.5737\sqrt{-1},\ \pm .999957$

As $c \to 2$, the first seven roots approach the exact values found when $c = 2$, while the two imaginary new roots approach ∞ (2.01 is ten times closer to 2 than 2.1, and the new roots are correspondingly ten times larger). The two real new roots approach ± 1 very rapidly.

For the whole system (2.2), there are 14 solutions when $c = 2.1$ or 2.01. Two of these go to ∞ as $c \to 2$. Furthermore, the solutions with $z = \pm 1$ coalesce with two new solutions whose z coordinates approach ± 1. This analysis reveals that the original system (2.1) has solutions at ∞ and that the solutions with $z = \pm 1$ have multiplicity 2. ◁▷

Page 187, fourth display: "$S + I \xrightarrow{\alpha} I \xrightarrow{\beta} R$" should be "$S + I \xrightarrow{\alpha} 2I,\ I \xrightarrow{\beta} R$"

Page 211, line −15: "intepreted" should be "interpreted"

Page 227, entry [45]: The entry should end with a period, not a comma.

Page 237, entry [281]: "1909" should be "1907".