

**Sign patterns of coefficients of power series associated  
with the spectra of positive matrices**

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**Abstract**

Suppose that  $A$  is an  $n \times n$  matrix with positive real entries and let  $f(t) = \det(I_n - At)$ .

For a positive real number  $c$ , let  $g(t) = f(t)^c$  and let

$$g(t) = 1 - g_1t - g_2t^2 - g_3t^3 - \dots$$

be its Taylor expansion about  $t = 0$ .

In joint work (Math. Ann. **364** (2016) 687-707) with Raphi Loewy (Technion) and Helena Šmigoc (UCD), we have shown that there exists  $c_0 > 0$  such that all the coefficients  $g_i$  are positive for  $0 < c < c_0$ .

We plan to discuss this result and the size of a lower bound for  $c_0$  as a function of  $A$ , as well as the fact that the  $g_i$  are eventually positive for  $0 < c < 1$ . Several examples will be presented to illustrate the results.