Enigmas, etc.

Two Pairs of Arcs in Comparison

■ **Takashi Ohira**

Consider two pairs of arcs along constant-*R* and -*X* circles on the Smith chart, as shown in Figure 1. Comparing them in terms of Poincaré length, choose the correct set of statements from the following:

(a) $\Lambda_1 = \Lambda_2$ and $\Lambda_3 = \Lambda_4$ (b) $\Lambda_1 = \Lambda_2$ and $\Lambda_3 \neq \Lambda_4$

(c) $\Lambda_1 \neq \Lambda_2$ and $\Lambda_3 = \Lambda_4$ (d) $\Lambda_1 \neq \Lambda_2$ and $\Lambda_3 \neq \Lambda_4$

Note that $0 < R_1 < R_2$ and $0 < X_3 < X_4$.

This problem can be solved without using complicated calculus. Instead, we can utilize the findings

Takashi Ohira (ohira@tut.jp) is with Toyohashi University of Technology, Aichi 441-8580, Japan. He is a Life Fellow of IEEE.
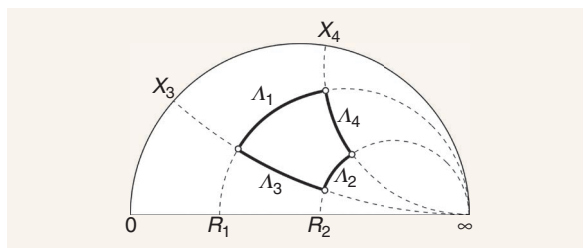
Figure 1. *Two pairs of arcs along constant-R and -X circles on the upper half of the Smith chart.*

from previous puzzles by projecting the four arcs onto a simpler plane. The curve holds its Poincaré length invariant, even when we change the plane or the coordinates for mapping. The correct answer will be revealed next month.