SOME COMPUTATIONS OF CONDUCTORS IN A NETWORK

JIM L. CARR

ABSTRACT. This paper contains the results of computations of the values of conductors in a resistor network. The accuracy of the calculations is of the order of 2 parts in 10 for a 14×14 network.

1. INTRODUCTION

We follow the notation and terminology of Curtis and Morrow [1]. We first make some calculations of Λ-matrices (Dirichlet to Neumann maps). These matrices are then used as input to the algorithm for calculating the values of the conductors in a network. We will refer to this algorithm as *the inverse algorithm*. This algorithm could be improved by using a method suggested by Landrum [2].

2. RESULTS

The largest network that could be "successfully" recovered was a 14×14 network with all conductivities equal to 1. The largest error made was in a vertical conductor in the center. The value computed was .79875630847448. The computed results are attached.

REFERENCES

1. Edward B. Curtis and James A. Morrow, *Determining the resistors in a network*, SIAM J. Appl. Math. **50** (1990), 918–930.
2. Joshua Landrum, *A comparison of three algorithms for the inverse conductivity problem*, technical report for summer REU program, University of Washington, 1990.