AN ANT ALGORITHM FOR THE MAXIMUM NUMBER OF 3-CLIQUES IN 3-PARTITE GRAPHS

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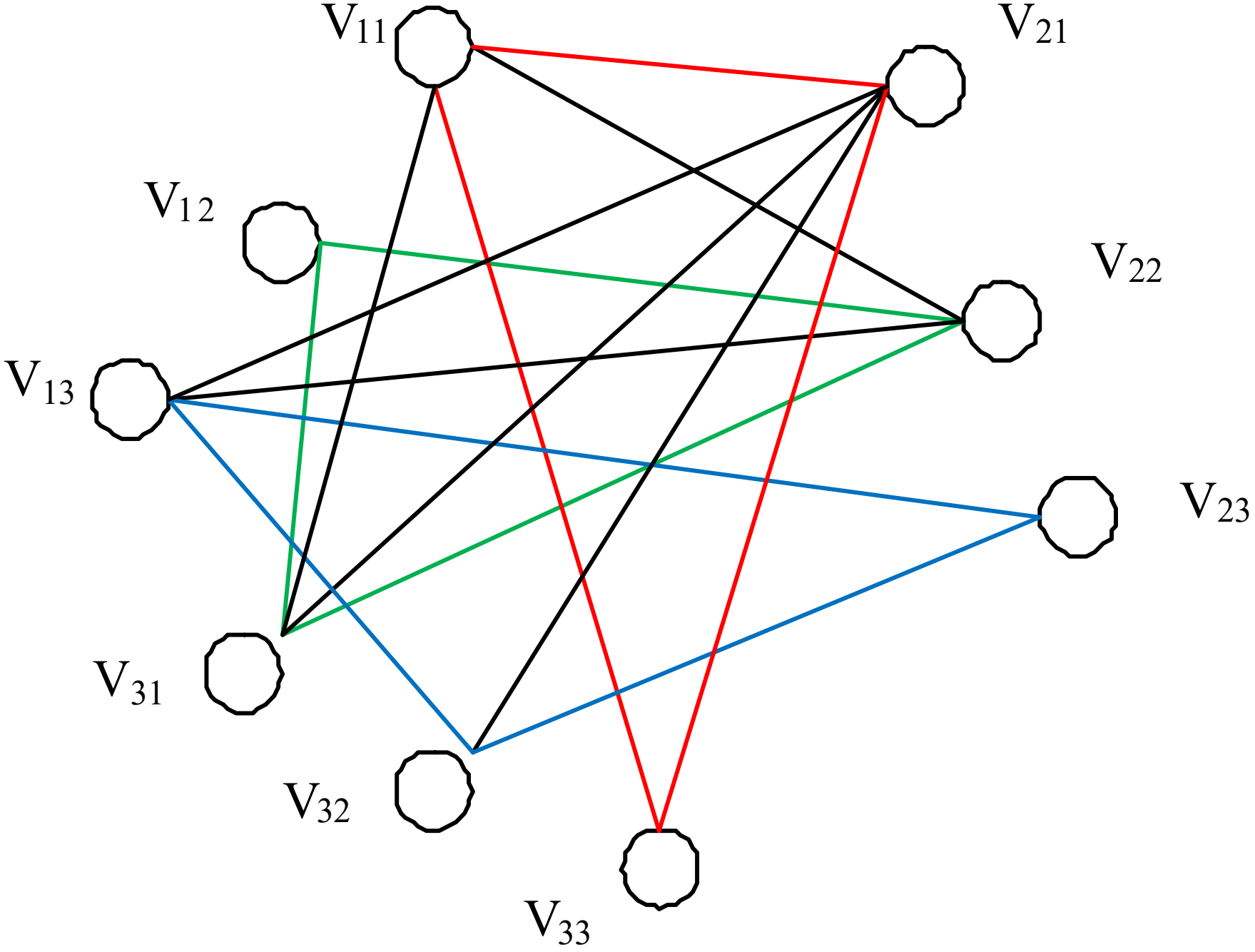
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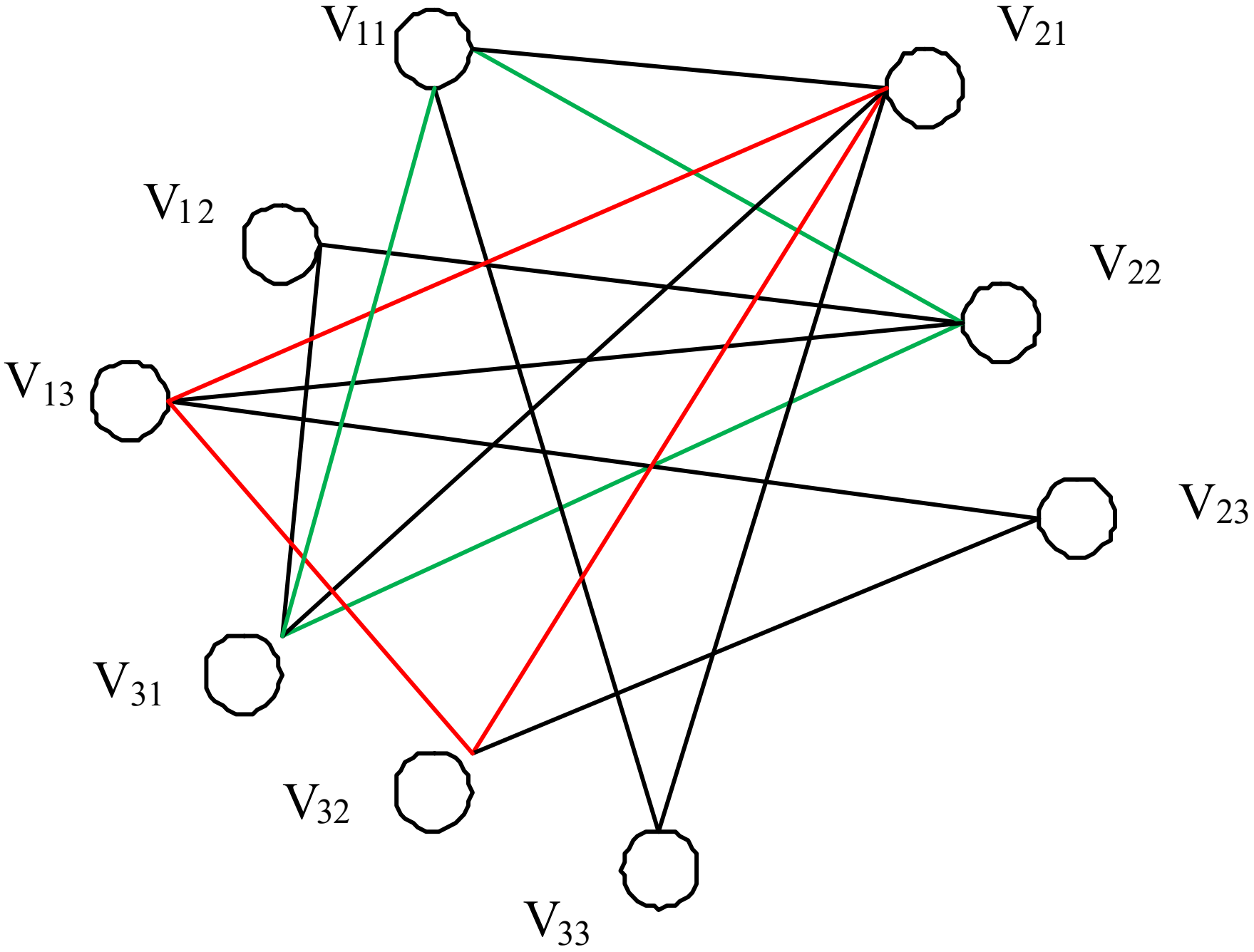
V11
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Algorithm 1. The General Ant Algorithm.

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for all i ∈ M: t(i) = t_{max}
for all cycles
  for all ants
    make a start point
    while (a solution S is not completed) **do**
     check which elements are available to be selected, put them into the set A
     select a next element from the set A with probability *p*(*j*)
     add a selected element to the S
  save in the S_b a best solution, which has been found by all ants in a cycle
  if S_b is better than S_{best} then save the S_b as the S_{best} : $S_{best} = S_b$
  for all i: t(i) = t(i) + r* t
  dt = f (S_b)
  if i ∈ S_b then t[i]= t(i) + dt
return S_{best}

$$p(j) = \tau_j \, n_j \, / \, \Sigma_j \, (\, \tau_j \, n_j \,)$$

$$n_j = 1/lz_j$$

lz_j – liczba klik 3-wierzchołkowych, do których wierzchołek j przynależy

Table 5.1 Averages number of cliques for different n, r=0.998, lc=20, lm=30, q=0.05.

n	50	100	150	200	250
ACO1	10,4	52,4	109,7	166,1	222,1
ACO2	10,4	52,9	114,0	172,6	227,1

Figure 5.1 Averages number of cliques for different n, r=0.998, lc=20, lm=30, q=0.05.

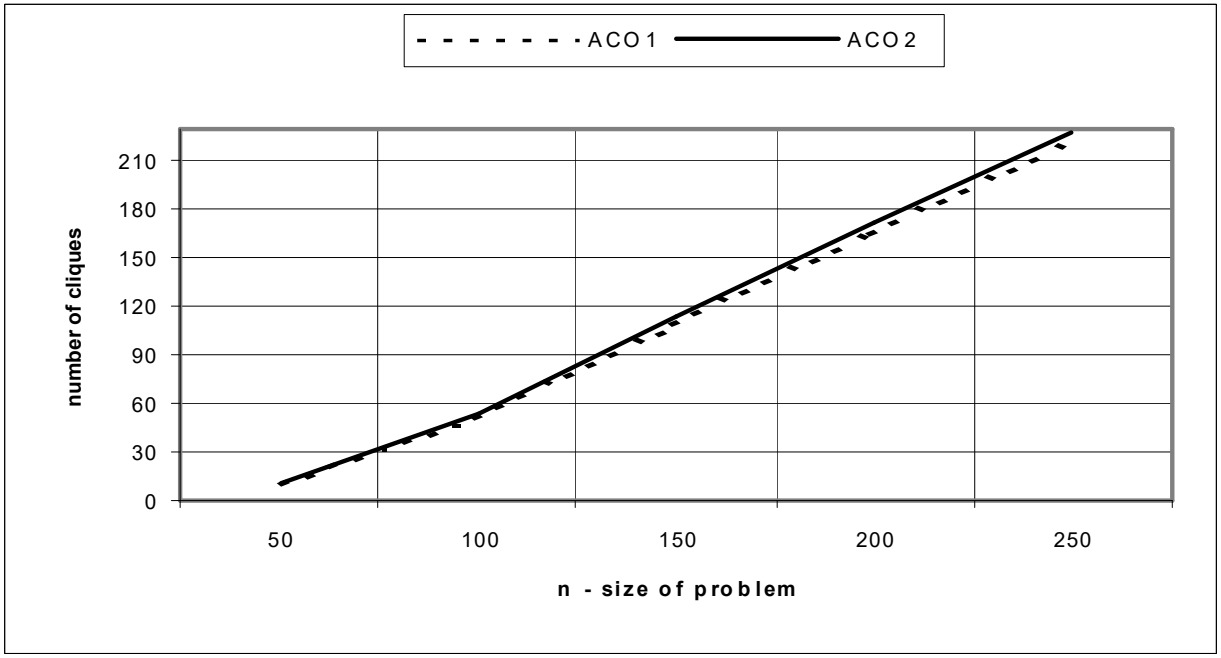
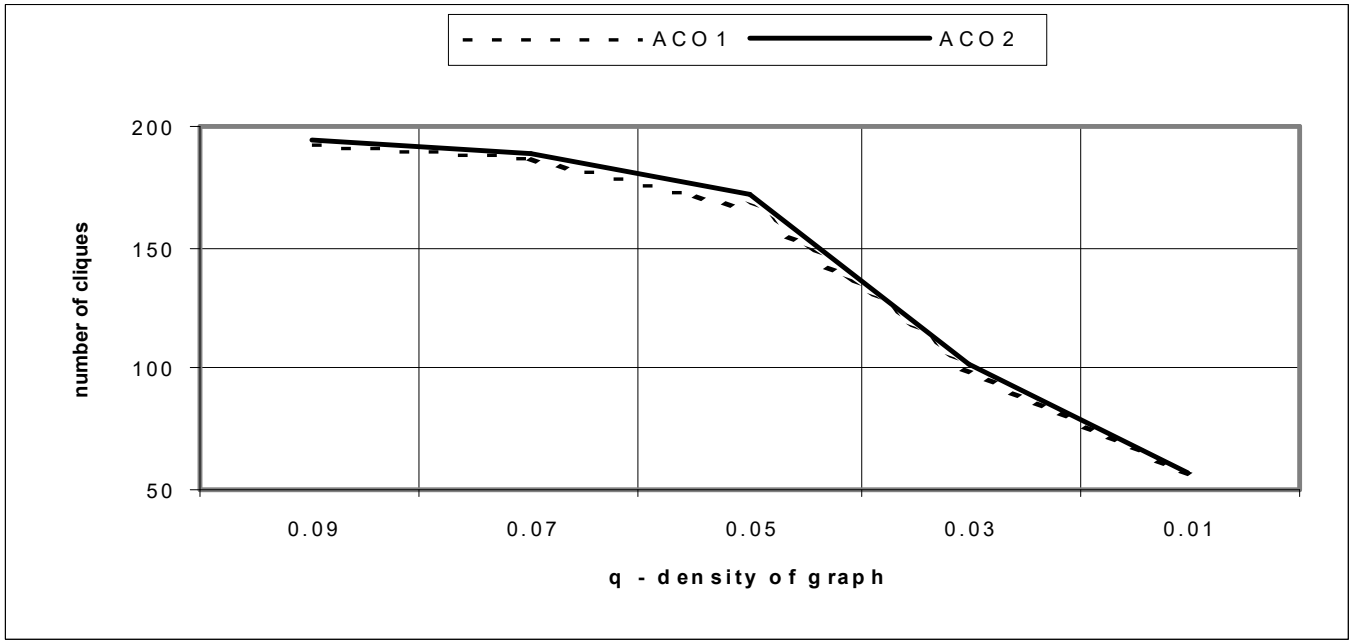


Table 5.3 Averages number of cliques for different q, r=0.998, n=200, lc=20, lm=30.

q	0.09	0.07	0.05	0.03	0.01
ACO1	193,2	187,0	166,1	100,0	57,0
ACO2	193,8	189,0	172,6	101,6	57,0

Figure 5.3 Difference in size for different lm and for n=250, lc=200, r=0.997.



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