ABSTRACT

In the field of mathematical programming, the number of subtour elimination constraints in the symmetric traveling salesman problem (TSP) is the following;

$$v(n) \ = \ \sum_{k=3}^{s} \frac{{}_nC_k}{r_k} \cdot \frac{(k-1)!}{2}, \qquad n \geq 6.$$

In the above expression, the value of n is the number of nodes in the TSP, the value of s is the largest integer that is not larger than the value of (n/2), and the value of r_k is decided as follows; let $r_k := 2$ if $k \ = \ n/2$, otherwise let $r_k := 1$.

The above contents appear in the following:

Akimine Nishikori, Bulletin of Hiroshima Prefectural University, Vol.15, No.1, August 2003,

Akimine Nishikori, Consideration on the Formulation of the Traveling Salesman Problem, Abstracts of Fall National Conference of Operations Research Society of Japan, No.1-G-11, pp.158-159, 2003.

Akimine Nishikori, Considerations on Subtour Elimination Constraints in the Formulation for Minimizing Traveling Distance, 52nd Joint Conference on Automatic Control of Japan, B4-5, pp.1-3, 2009.

Akimine Nishikori, Necessary and Sufficient Condition on Subtour Elimination Constraints in the Formulation of Symmetric Traveling Salesman Problem, Proceedings of the International Conference on Electrical Engineering 2012, pp.72-76, 2012.