ABSTRACT

LOCATION-ALLOCATION PROBLEM OF MULTI-PERSON FACILITY

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This paper considers the location-allocation problem of the facility, such as meeting room, tennis court and park where in the group of users contains different locations corresponding to the facility. The algorithm to solve this problem is formulated.

Firstly, the location-allocation problem of multi-person facility is formulated in N-dimensional space, and it is shown that this problem can be reduced to a geographical optimization problem where the facility corresponds to the single user.

Secondly, this problem is solved both in a fundamental model and in actual population density data of areas such as Utsunomiya, Hitachi and Suwa by using the algorithm of geographical optimization problem. From these results, the tendency of the optimal location of facility to concentrate in the center is developed.

Finally, the robustness of the optimal location-allocation model with regards to the number of members of the group is considered from the standpoint of urban facility planning such as accessibility and capacity of facilities. Because of nonrobustness, it has been understood that, for the multi-person facility, the location-allocation problem must be formulated taking note of the number of members of the group.