Max-type objective functions: A smoothing procedure and strongly stable stationary points

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We consider the minimization of a max-type function over a feasible set M and apply the concept of strongly stable stationary points to this class of problems. We use a logarithmic barrier function and construct a family M^γ of interior point approximations of M where M^γ is described by a single smooth inequality constraint. We show that there is a one-to-one correspondence between the stationary points (and their corresponding stationary indices) of the original problem and those with the feasible set M^γ.