Jordan Curves with Polynomial Inverse Moduli of Continuity

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Computational complexity of two-dimensional domains whose boundaries are polynomial-time computable Jordan curves with polynomial inverse moduli of continuity is studied. It is shown that the membership problem of such a domain can be solved in P^{NP}, i.e., in polynomial time relative to an oracle in NP, in contrast to the higher upper bound P^{MP} for domains without the property of polynomial inverse modulus of continuity. On the other hand, the lower bound of UP for the membership problem still holds for domains with polynomial inverse moduli of continuity. It is also shown that the path problem of such a domain can be solved in *PSPACE*, matching its known lower bound, while no fixed upper bound was known for domains without this property.