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A "Hot Potato" transposition Gray code for permutations

We prove the existence of a "Hot Potato" Gray code for permutations that always transposes the value 1 with a value that is one or two positions to its left or right, circularly. This appears to be the first permutation Gray code that restricts both the values and positions of the transposed symbols. Our construction relies on the doubly-adjacent Gray code by Compton and Williamson. This is joint work with Aaron Williams.