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chang-pao chen* (cpchen@wmail.hcu.edu.tw), Department of Applied Mathematics, Hsuan Chuang University, Hsinchu, 30092, Taiwan, **Jin-Wen Lan** (d937210@oz.nthu.edu.tw), Department of Mathematics, National Tsing Hua University, Hsinchu, 30013, Taiwan, and **Dah-Chin Luor** (dclour@isu.edu.tw), Department of Applied Mathematics, I-Shou University, Kaohsiung, 84008, Taiwan. *The Muckenhoupt-type estimations for the best constants in multidimensional modular inequalities over spherical cones.*

In this paper, we establish the Muckenhoupt-type estimation for the best constant C associated with the following multidimensional modular inequality over a spherical cone:

$$\left(\int_E \left\{ \Phi \left(\int_{\tilde{S}_x} k(x,t) f(t) d\sigma(t) \right) \right\}^q d\mu \right)^{1/q} \leq C \left(\int_E \left\{ \Phi(f(x)) \right\}^p d\nu \right)^{1/p},$$

where $f \in L_{\Phi}^p(d\nu)$ and $1 \leq p, q \leq \infty$. Similar results are also derived for the complementary integral operator. As a consequence, we give the n -dimensional weighted extensions of Levinson's modular inequality, extensions of Stepanov's and Heinig's results, generalizations of the Hardy-Knopp-type inequalities, and those for the Riemann-Liouville operator and the Weyl fractional operator. We also point out that our estimates are better than the known ones. (Received September 15, 2011)