962-30-896 **Daniel F. Shea*** (shea@math.wisc.edu), Department of Mathematics, University of Wisconsin, Madison, WI 53706, **Matts R. Essen** (matts@math.uu.se), Uppsala, Sweden, and **Charles S. Stanton** (stanton@math.csusb.edu), Department of Mathematics, California State University, San Bernardino, CA 92407. *Sharp Inequalities for Integral Means of Conjugate Functions.*

Using a new method prompted by B. Cole's study of conjugate function problems, we prove inequalities like

$$\begin{aligned}\int_0^{2\pi} |\tilde{f}| \log^{\alpha-1}(e+|\tilde{f}|)d\theta &\leq \frac{2}{\pi\alpha}\int_0^{2\pi} |f| \log^{\alpha}(e+|f|)d\theta \\ &+ \frac{2}{\pi}\int_0^{2\pi} |f| \log(e+|f|)\log\log(e+|f|)d\theta \\ &+ A\int_0^{2\pi} |f| \log(e+|f|)d\theta \quad (1<\alpha<\infty)\end{aligned}$$

for $f \in L\log^{\alpha} L$ and $\tilde{f}$ = conjugate function; here the constants $\frac{2}{\pi\alpha}$ and $\frac{2}{pi}$ cannot be reduced. There are corresponding results for $0 \leq \alpha \leq 1$. (Received September 28, 2000)