

# RESEARCH GROUP IN MATHEMATICAL INEQUALITIES AND APPLICATIONS

## PROBLEM CORNER

Problem 4, (2009)

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Let  $a, b, c$  be the sides of  $\triangle ABC$ . Prove that

$$(1) \quad \frac{a}{b+c} \tan^2 \frac{B}{2} \tan^2 \frac{C}{2} + \frac{b}{c+a} \tan^2 \frac{C}{2} \tan^2 \frac{A}{2} + \frac{c}{a+b} \tan^2 \frac{A}{2} \tan^2 \frac{B}{2} \leq \frac{1}{6}.$$