REMARKS ON FRINK’S METRIZATION TECHNIQUE
AND APPLICATIONS

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Abstract. In this paper, we give a simple counterexample to show again the limits of Frink’s
construction [17, page 134] and then use Frink’s metrization technique to answer two conjectures
posed by Berinde and Choban [5], and to calculate corresponding metrics induced by some b-metrics
known in the literature. We also use that technique to prove a metrization theorem for 2-generalized
metric spaces, and to deduce the Banach contraction principle in b-metric spaces and 2-generalized
metric spaces from that in metric spaces.

Key Words and Phrases: Metrization, quasi-metric, b-metric, 2-generalized metric, fixed point.

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References

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