Interferometric Measurement of the Source Velocity

Boris Tomášik [a] Ulrich Heinz [b,c]

[a] *Department of Physics, University of Virginia, P.O. Box 400714, Charlottesville, VA 22904-4714, USA*

[b] *Theoretical Physics Division, CERN, CH-1211 Geneva 23, Switzerland*

[c] *Department of Physics, The Ohio State University, Columbus, OH 43210, USA*

Presented by: Boris Tomášik

Abstract

The method of measuring the source velocity by employing the so-called YKP parametrisation of the Bose–Einstein correlation function is critically reviewed. It is found that the velocity parameter of this parametrisation (the YK velocity) depends on the boson pair momentum in a crucial way. This dependence can lead to a non-zero YK velocity even for a non-expanding source at rest. This observation renders the measurement of the source velocity employing this method doubtful. We propose a possible approach to the source rest frame determination by looking for extrema of the Pratt–Bertsch correlation radii.

Preprint submitted to Elsevier Preprint *20 December 2000*