

INSTRUMENTAL PROCESSES, ENTROPIES, INFORMATION IN QUANTUM CONTINUAL MEASUREMENTS

A. BARCHIELLI

*Politecnico di Milano, Dipartimento di Matematica,
Piazza Leonardo da Vinci 32, I-20133 Milano, Italy.
E-mail: Alberto.Barchielli@polimi.it*

G. LUPIERI

*Università degli Studi di Milano, Dipartimento di Fisica,
Via Celoria 16, I-20133 Milano, Italy.
E-mail: Giancarlo.Lupieri@mi.infn.it*

Dedicated to Alexander S. Holevo on his 60th birthday

In this paper we will give a short presentation of the quantum Lévy-Khinchin formula and of the formulation of quantum continual measurements based on stochastic differential equations, matters which we had the pleasure to work on in collaboration with Prof. Holevo. Then we will begin the study of various entropies and relative entropies, which seem to be promising quantities for measuring the information content of the continual measurement under consideration and for analysing its asymptotic behaviour.

Acknowledgments

Work supported in part by the *European Community's Human Potential Programme* under contract HPRN-CT-2002-00279, QP-Applications, and by *Istituto Nazionale di Fisica Nucleare, Sezione di Milano*.