



**Bayesian analysis of ARA imperfect maintenance models
with corrective and planned preventive maintenance**

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This paper proposes a Bayesian analysis of ARA imperfect maintenance models, when both Corrective Maintenance (CM) and planned Preventive Maintenance (PM) are performed. The Arithmetic Reduction of Age (ARA) models consider that maintenance effect is to rejuvenate the system by an arithmetic reduction of its virtual age. The choice of prior distributions and the computation of posterior distributions are discussed. A numerical study on the quality of the Bayesian estimators is presented, as well as a comparison with the maximum likelihood estimators. Finally, the approach is applied to real data sets.

Keywords: reliability, imperfect maintenance, virtual age models, Bayesian inference.