

**MEETING ON TOMOGRAPHY AND  
APPLICATIONS  
MATHEMATICS DEPARTMENT, POLITECNICO DI MILANO  
MARCH 21-23, 2016**

**On the challenging application of a fast scanning protocol applied on multiphase objects subject to heat transfer**

**ABSTRACT** Applications of X-ray tomography at the microscale level on multiphase and heat transfer experiments offer researchers challenging problems in which the relatively slow scanning protocol of conventional micro-CT setups is unsatisfactory for the matching of unsteady problems, e.g. for oscillating or evaporating surfaces such as water droplets.

Combining high X-ray flux and/or utilizing of faster acquisition units is usually not sufficient due to several technological problems, i.e. scintillator decay time and sensitivity, instability of the higher X-ray flux and the consequent focal spot thermal drifting.

Instead, the acquisition time must also be restricted by reducing the number of projection measurements. This, however, leads to limited reconstruction problems in which the available information is insufficient to create an accurate representation of the scanned object. To overcome this problem, prior knowledge regarding the objects density distributions can be exploited.

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