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The proliferation of low cost WebCams and mobile phone cameras made with CMOS imagers nowadays has two direct consequences: 1° very low production cost for standard CMOS imager chip/module and 2° large availability of foundry and packaging facilities in the world. These factors should trigger the development of many new applications based on this kind of low cost and potentially low power imaging devices. In this paper, we try to give a technical discussion of some issues on CMOS imaging circuit design. The purpose of this discussion is to give a global vision of CMOS imaging devices both from architectural point of view and also from technological point of view. By a comparison with other imaging technologies such as CCD, we try to trace a development direction of CMOS imaging devices in terms of new applications rather than a simple replacement of CCD devices.

The proposed paper will be articulated around the following sections:

1. Introduction
2. State of the art of CMOS Imaging devices
3. Physical Design Issues of CMOS imaging array
 - 3.1 Pixel and Pixel Array Design
 - 3.2 Low power pixel array design
 - 3.3 Low power ADC design
 - 3.4 Noises Compensation
4. Conclusion