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Flicker or rapid voltage fluctuations, is a phenomenon where supply voltage changes very rapidly and often, which is most common perceived as dimming and brightening of lamps (light flicker). Even fluctuation under a percent can cause light flicker that is perceived annoying. Most common sources for flicker, are pulse-like and intermittent loads like rolling mills, welding and electrical arc furnaces. In residential environments and in especially in rural environments with old wiring, flicker can follow from the use of big residential load as coffee maker or microwave oven.

In the past, severity of flicker was determined by using simple curves (IEEE 141), which had been established from human experiments. They were later replaced with devices called flickermeter, which design was started in the 70s. First IEC standard was IEC 868 (1986) which now has been replaced with IEC/EN 61000-4-15 (1997). But these IEC flickermeters have serious deficiencies with measurement of discharge lamps and interharmonics.

In this special assignment, the basic characteristics of the phenomenon are first examined, followed by measurement methods. And after current methods and their deficiencies we are going to review couple of proposed methods and see their benefits. New proposed methods use new signal processing or digital algorithms to ensure better measurement accuracy under all conditions.

Keywords: flicker, flickermeter, voltage fluctuations, metrology, measurements, IEC, IEEE, UIE, CRIEPI, incandescent, fluorescent, lamp, electric arc furnace, spectral analysis, simulation, health effects, perception, brain