

**PREDICTIVE AND PULSED ILLUMINATION OF A SURFACE IN A
MICRO-TEXTURE NAVIGATION TECHNIQUE**

Abstract

An optical navigation system saves power by pulsing its surface illumination light source (3) to provide light only when needed. The level of light may be controlled by a servo-mechanism that monitors degree of correlation data and average illumination, and that changes the controlled level at times when it is both required and safe to do so. As for creating different levels of illumination, that may be accomplished by: [1] pulsing the light on (23) and then opening the electronic shutter for some period of time (24) during the pulse (gating the light); [2] opening the shutter and then varying the pulse width of the light (21, 22) (gating the LED); [3] opening the shutter and then pulsing the LED at different intensities (19, 20); and [4] a combination of [2] and [3]. In addition, the velocity of the navigation circuit over the surface (or vice versa) can be determined, and in cases where it is safe to assume that limited acceleration is possible, at low velocities it is desirable to reduce the rate of data acquisition, and thereby pulse the light sources less often and conserve power.

Figure 1