about 10 degfees. Communication fange of modulated IR is about 0,5m, see Fig. 2. Due to passive PCM filter, the communication fange was fixed on this distance and used in 4kbps communication mode. Avefage fange of the analog blue light system is about 1-1,3m and can be vafied by fegulating intensity and numbef of LEDs.

The main idea for using two diffefent optical systems was a split between analog gfadient-based intefactions between fobots (visible for human observef) and digital channels used for fobot-objects intefactions and for communication, which synchfonizes intefnal states of fobots and docking station (invisible for obsewefs). Thus, a combin2(t)1(i)1(o)-6(n)-6(,355(b)-6(e)-2(t)1(w)-1(e)-2(e)-2(n)]TJ T* [(a)-2(n)-6(a)-2(l)1(o)-6(g
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gradient when several robots meet each other; they create complex gradients, which can be used for precise multi-robot navigation. Unfortunately, blue-light sensors continuously receive signals from their own light s [(r)he(v)6(e)-218oh tnatunffieciene