Recent Studies of Coherent Bremsstrahlung HERBERT UBERALL, Catholic University — The concept of coherent bremsstrahlung (CB), i.e., of X-rays generated by electrons in single crystals that exhibit monochromatic spikes was brought to light by Dyson and Uberall (Phys. Rev. 99, 1955, p. 604). Experimental studies were first carried out by Diambrini et al. (Rev. Mod. Phys. 40, 1968, p. 611) and repeated world-wide afterwards. These spikes are almost 100% linearly polarized, such that CB is now being developed into a source of monochromatic polarized radiation in a way where no other method could accomplish that, and where many scientific investigations are now becoming possible due to its use, e.g. at Jefferson Lab., Newport News, VA. 5.7 GeV electrons produce 2-GeV photons with 84% polarization at the peak energy. Experiments carried out with them involve production of ρ, ζ and ω mesons. Electrons of 189 GeV at CERN yield CB photons at 170 GeV. Studies are being carried out at 855-MeV Mainz electron accelerator MAMI, of the Mozley-de Wire effect, which, by collimating the emitted radiation, narrows the width of the CB peaks and enhances the CB linear polarization.

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