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The SENSEI project

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We present the status and prospects of the Sub-Electron Noise Skipper Experimental Instrument (SENSEI) currently operating in the MINOS cavern at Fermilab. SENSEI uses a non-destructive readout technique to achieve stable readout for a thick fully depleted silicon CCD in the far sub-electron regime (~ 0.05 e⁻ rms/pix). This is the first instrument to achieve discrete sub-electron counting reproducibly over millions of pixels on a stable, large-area detector. This innovative technology has nearly immediate implications for a wide range of scientific disciplines including Dark Matter Direct detection experiments, astronomy and fundamental particle physics.

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