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Baryogenesis via Post-Inflationary Relaxation of the Higgs Vacuum Expectation Value LAUREN PEARCE[1], Univ of Illinois - Urbana — In the Standard Model with a Higgs boson of mass 125 Gev, the Higgs potential becomes relatively flat at large scales. Consequently, during an inflationary epoch the Higgs field vacuum expectation value (VEV) $\sqrt{\langle\phi^2\rangle}$ generically becomes large due to fluctuations in this potential. As the Hubble parameter decreases during reheating, this VEV will relax to its equilibrium value. This out-of-equilibrium epoch provides novel opportunities for baryogenesis. We consider an effective operator of dimension six, $\phi^2 F\tilde{F}/\Lambda^2$, which couples the Higgs field to the SU(2) gauge fields. This can be rewritten in the form $(\partial_\mu\phi^2)j^\mu_{B+L}/\Lambda^2$, which biases the production of leptons and/or baryons during the Higgs relaxation epoch, provided that a baryon-number-violating or lepton-number-violating process occurs. As a minimal example, we introduce lepton-number-violating Majorana masses in the neutrino sector. To emphasize the novelty of this scenario, the right handed neutrinos are kept sufficiently heavy to suppress thermal leptogenesis. In addition to describing the relevant parameter space, if time permits I will also discuss potentially observable signatures, particularly regarding the cosmic infrared background

[1]Based on work also done with: Alex Kusenko (UCLA & Kavli IPMU), Louis Yang (Kavli IPMU, formerly UCLA), Marco Peloso (University of Minnesota), and Masahiro Kawasaki (University of Tokyo ICRR & Kavli IPMU)

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