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On the dual of commensurability and virtual embeddings into direct products

Groups G_1, G_2 are commensurable if there is a third group H that embeds as a finite index subgroup in G_1 and G_2. We can "reverse the arrows" and declare G_1, G_2 to be co-commensurable if they both embed as finite index subgroups of a common overgroup. Co-commensurability implies commensurability. An exploration of the methods to construct common finite covers of graphs led me to an exploration of when a commensuration can induced by a co-commensuration. In this presentation I will cover the motivating problem as well as the solution to the problem of when a commensuration can be completed to a co-commensuration. I will then discuss the unexpected contribution of Ashot Minasyan who saw that my ideas had implications towards virtual embeddings of groups into direct products.