



US 20230231559A1

(19) **United States**(12) **Patent Application Publication**  
**CHATTERJEE et al.**(10) **Pub. No.: US 2023/0231559 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **VOLTAGE LEVEL SHIFTER FOR  
SUB-THRESHOLD OPERATION****Publication Classification**(51) **Int. Cl.****H03K 19/0185** (2006.01)(52) **U.S. Cl.**CPC ..... **H03K 19/018521** (2013.01)(71) Applicant: **STMicroelectronics International  
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N.V., Geneva (CH)**(21) Appl. No.: **18/151,337**(22) Filed: **Jan. 6, 2023****Related U.S. Application Data**(60) Provisional application No. 63/299,833, filed on Jan.  
14, 2022.

(57)

**ABSTRACT**

Provided is a voltage level shifter that operates in sub-threshold voltages. The level shifter includes a level shifting stage. The level shifting stage receives a first signal from a first voltage domain and outputs a second signal to a second voltage domain. The level shifter includes a first auxiliary stage. In response to the first signal having a first voltage level corresponding to a first logical state and a first node of the level shifting stage having a supply voltage level, the first auxiliary stage sources current to a second node of the level shifting stage. Sourcing the current to the second node accelerates a transition of the first node to a reference voltage. The level shifting stage outputs a second signal to a second voltage domain.

