Commentary on Wedges Spreadsheet
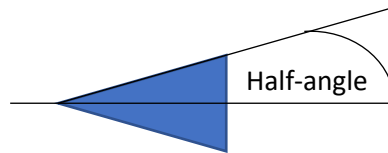
- The input Mach number is the Mach number of the input (wind-tunnel) air stream.
- The wedge half-angle is the angle between the centre-line and wedge edge.

- β is the shockwave angle – Det means the shockwave is detached from the wedge.
- The output Mach number is that after the wedge bow (front) shockwave. Sub means that this flow is subsonic (or at least some of it is, because the bow shockwave is detached).
- Engine free-stream equivalent gives the free-stream engine equivalent Mach number for which the output Mach number generated by the wedge would be flow speed at the input to the mixing section in a real engine. NA is not available because the flow is subsonic. Too Low is a value considered too low, according to Billig, for scramjet operation (it's in the ramjet regime).
- The column with M = 2.36 is the minimum wedge-angle required, given the input Mach Number, to get a Mach number after the wedge of 2.36 – which is the Mach number going into the mixing section of a Mach 5 free-stream engine.
- The table on the top right gives the input (tunnel) Mach numbers required to get 2.36 after the wedge (mixing section velocity for a Mach 5 free-stream engine) and 1.95 (mixing section velocity for a Mach 4 free-stream engine). These are given for different wedge half-angles.
- The lower-right table gives the mixing section velocities needed to simulate various free-stream engine conditions (reference this will Billig's table on page 9 of the Scramjet notes).