1. Abstract
This paper provides some simple calculations from AT Math and Physics on how stuttering may occur. We see that adrenaline affects the frequency of the human mind resulting in a nerve signal velocity that is too slow for the tongue muscle to respond, thus no clear speech.

2. Introduction
In this paper, we consider the mathematics and physics behind stuttering. We have observed that stutters do worse under stress, yet, when not under stress, their speech is lucid. I hypothesize that it is adrenaline (norepinephrine) that leads to a worsening circumstance for stuttering to occur. We begin with the chemistry of adrenaline. Familiarity of AT Math is assumed.

\[ C_9H_{13}NO_+9 \text{ H}_2O +2 \frac{1}{2} \text{ H}_2 \rightarrow 9\text{CH}_4 +\text{NO} +4 \frac{1}{2} \text{ O}_2 \]

Norepinephrine + Water \rightarrow Methane + Nitrous Oxide + Oxygen

\[ \begin{align*}
12.0107 \times 9 &= 108.0963 \\
14.0067 \times 1 &= 14.067 \\
15.999 \times 10 &= 159.98 \\
1.0008 \times 36 &= 36.288 \\
\Sigma 318.43x6.023 &= 1917.9 g \\
318.43 &= \text{frequency of the human mind}=1/\pi \\
\text{Freq}=1/T &= 1/((1/t)
\text{E}=1/t &= 3.141 \sim \pi \\
\text{TE}=M [0.15915] \\
3.141 &= M(0.15915) \\
M &= -1.9736
\end{align*} \]

\[ M=\ln t \]
\[ t=\exp(1.9736) \]
\[ =1.0199 \sim 102 \\
=\text{KE}=1/2\text{Mv}^2 \]
\[ 1.02=1/2 \ (1.9736) \ v^2 \]
\[ v^2=1.03357 \]
\[ v=10.166 <11.027 \]
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\[ \Delta v=0.861 \]

It takes 1/5 sec to utter a word.
\[ v=d/t \]
\[ 0.861=d/(1/5) \]
\[ d=1.722 \]
\[ 1.722/\sqrt{3}=0.0994=\rho_{\text{blood}} \]
\[ t=\text{KE}=1/2\text{p} \ v^2 \]
\[ s=t=d \]
\[ 1.722=1/2(0.994)(v^2) \]
\[ v=1.861 \]
\[ \text{GMP} \ E=-1.248 \sim -1.25 \]

The nerve signal is too slow for the tongue to respond with flight or fight adrenaline in the speaker's system.

3. Conclusion
We see that perhaps it is adrenaline that worsens stutters speech.

References