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## Media Release

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### How maths helps to make beautiful music

A new software application that generates musical loops has been developed by researchers at the MARCS Institute for Brain, Behaviour and Development.

The software – Xronomorph - designed by Dr Andrew Milne and PhD student Steffen Herff, uses sophisticated mathematical equations to create interesting and novel musical structures.

Dr Milne said by using two mathematical principles – well-formedness and perfect balance – the software allowed users to easily navigate two distinct rhythmic sub-spaces that were of musical interest, but had generally been hard to explore with traditional computational tools.

“A rhythmic loop in music is best described as a section of repetitive sound material,” he said.

“A common feature of rhythmic loops is that they are multilevel. This means that even in simple time signatures, there are trillions of different possible rhythms and these rhythms form the basis of any musical composition.

“Rhythmic and melodic loops are an essential component of most electronic dance music and hip-hop, and they also play an important role in rock, jazz, Latin and non-Western music.”

Dr Milne said by designing the software, he aimed to simplify the process of generating rhythmic loops and encourage musical engagement – with potential application in music education.

“The great thing about Xronomorph is that you don’t need to be musically trained to use it. You don’t need extensive knowledge about rhythmic loops or software operation. It is very user friendly,” he said.

“With Xronomorph, we can now unlock the potential to explore a new subspace of musically interesting rhythms that was previously inaccessible.

“I hope this software will inspire musicians and music enthusiasts to create interesting rhythms that would ordinarily be hard to develop manually or to otherwise compose.”

Dr Milne said he and Mr Herff’s commitment to the accessibility of science meant that the software is and will remain free.

**ENDS**

To learn more about Xronomorph visit: <http://www.dynamictonality.com/xronomorph.htm> or check out the YouTube page at: <https://www.youtube.com/c/xronomorph>

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