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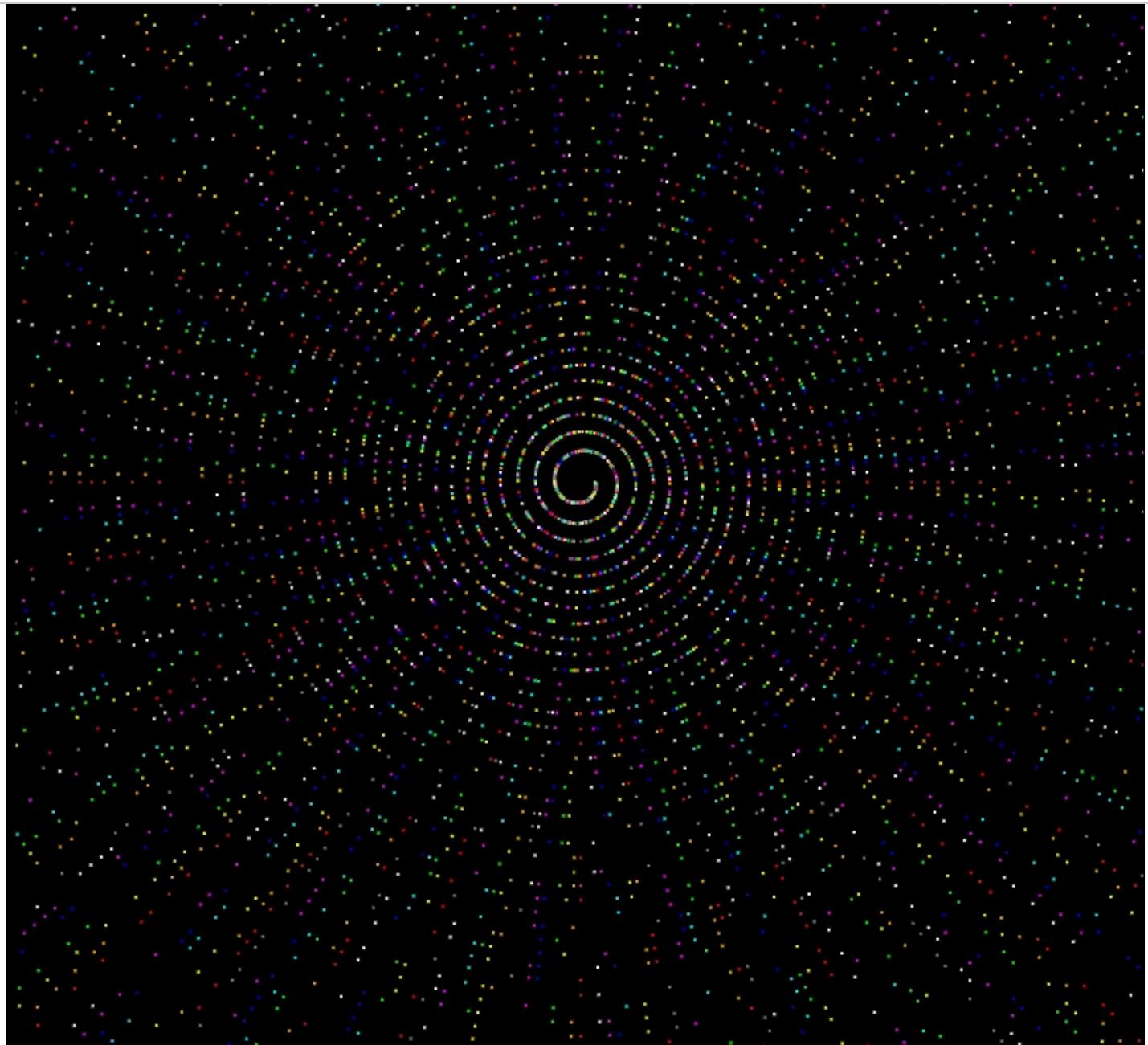
TheStocksGuy



Dirichlet's Theorem (Evolved by +3 Increasease of Interconnected Primes)

This code visualizes prime numbers using Dirichlet's theorem on a black canvas. It plots primes radially, changing colors every 3rd prime, and connecting them incrementally by 3. The result is a vibrant, dynamic display of prime distributions. 300,000 prime numbers here.

Feel free to experiment with this HTML Canvas on your own. Simply save the file as .html, then drag and drop it into your browser or open it directly. It serves as a fluent example for exploring and interacting with the code.

[Skip to main content](#)[+ Create](#)

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Dirichlet Theorem Visualization</title>
  <style>
    body {
      background-color: black;
      color: white;
    }
    canvas {
      display: block;
```

[Skip to main content](#)[+ Create](#)

```
</style>
</head>
<body>
    <canvas id="primeCanvas" width="1200" height="1200"></canvas>
    <script>
        const canvas = document.getElementById('primeCanvas');
        const ctx = canvas.getContext('2d');
        const width = canvas.width;
        const height = canvas.height;
        const colors = ['#FF0000', '#FFA500', '#FFFF00', '#00FF00', '#00FFFF', '#0000FF', '#FF00FF'];
        let zoomLevel = 1;
        let offsetX = 0;
        let offsetY = 0;

        function isPrime(num) {
            if (num <= 1) return false;
            if (num <= 3) return true;
            if (num % 2 === 0 || num % 3 === 0) return false;
            for (let i = 5; i * i <= num; i += 6) {
                if (num % i === 0 || num % (i + 2) === 0) return false;
            }
            return true;
        }

        function drawPrimeChart() {
            const centerX = width / 2;
            const centerY = height / 2;
            let angleIncrement = 2 * Math.PI / 360;
            let radius = 10;

            ctx.clearRect(0, 0, canvas.width, canvas.height);
            ctx.save();
            ctx.translate(offsetX, offsetY);
            ctx.scale(zoomLevel, zoomLevel);

            for (let num = 1; num < 300000; num++) {
                if (isPrime(6 * num + 1)) {
                    let angle = num * angleIncrement;
                    let x = centerX + radius * Math.cos(angle);
                    let y = centerY + radius * Math.sin(angle);
                    ctx.fillStyle = colors[(num % 9)];
                    ctx.fillText(6 * num + 1, x, y);
                    radius += 0.1;
                }
            }
            ctx.restore();
        }
    </script>

```

[Skip to main content](#)[+ Create](#)

```

const mouseX = event.offsetX;
const mouseY = event.offsetY;

if (event.deltaY < 0) {
    zoomLevel *= 1.1;
    offsetX = mouseX - (mouseX - offsetX) * 1.1;
    offsetY = mouseY - (mouseY - offsetY) * 1.1;
} else {
    zoomLevel /= 1.1;
    offsetX = mouseX - (mouseX - offsetX) / 1.1;
    offsetY = mouseY - (mouseY - offsetY) / 1.1;
}
drawPrimeChart();
});

drawPrimeChart();
</script>
</body>
</html>

```

1

5

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```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Dirichlet Theorem Visualization</title>
    <style>
        body {
            background-color: black;
            color: white;
        }
        canvas {
            display: block;
            margin: auto;
            background-color: black;
        }
    </style>
</head>
<body>
    <canvas id="primeCanvas" width="1200" height="1200"></canvas>
    <script>
        const canvas = document.getElementById('primeCanvas');
        const ctx = canvas.getContext('2d');
        const width = canvas.width;
        const height = canvas.height;
        const colors = ['#FF0000', '#FFA500', '#FFFF00', '#00FF00', '#00FFFF', '#0000FF', '#FF
        let primes = [];
        let zoomLevel = 1;
        let offsetX = 0;
        let offsetY = 0;
        let animationFrameId;
        let isAnimating = true;

        function isPrime(num) {
            if (num <= 1) return false;
            if (num <= 3) return true;
            if (num % 2 === 0 || num % 3 === 0) return false;
            for (let i = 5; i * i <= num; i += 6) {
                if (num % i === 0 || num % (i + 2) === 0) return false;
            }
            return true;
        }

        function generatePrimes() {
            for (let num = 1; num < 300000; num++) {
                if (isPrime(6 * num + 1)) {
                    primes.push(6 * num + 1);
                }
            }
        }

        function drawPrimes() {
            ctx.clearRect(0, 0, width, height);
            for (let i = 0; i < primes.length; i++) {
                let prime = primes[i];
                let angle = prime * Math.PI / 180;
                let x = Math.cos(angle) * (prime * zoomLevel) + width / 2;
                let y = Math.sin(angle) * (prime * zoomLevel) + height / 2;
                ctx.fillStyle = colors[i % colors.length];
                ctx.beginPath();
                ctx.arc(x, y, 10, 0, 2 * Math.PI);
                ctx.fill();
            }
        }

        function handleZoom(event) {
            let scale = event.deltaY / 100;
            zoomLevel *= scale;
            if (zoomLevel < 1) zoomLevel = 1;
            if (zoomLevel > 10) zoomLevel = 10;
            offsetX -= event.offsetX * scale;
            offsetY -= event.offsetY * scale;
        }

        function handleAnimation() {
            if (isAnimating) {
                drawPrimes();
                requestAnimationFrame(handleAnimation);
            }
        }

        window.addEventListener('load', () => {
            generatePrimes();
            handleAnimation();
        });

        window.addEventListener('wheel', handleZoom);
        window.addEventListener('pointermove', (event) => {
            if (isAnimating) {
                let x = event.clientX - offsetX;
                let y = event.clientY - offsetY;
                let angle = Math.atan2(y - height / 2, x - width / 2);
                let prime = Math.tan(angle) * zoomLevel + 1;
                if (isPrime(prime)) {
                    primes.push(prime);
                }
            }
        });
    </script>
</body>

```

[Skip to main content](#)[+ Create](#)

```
function drawPrimeChart() {
    const centerX = width / 2;
    const centerY = height / 2;
    let angleIncrement = 2 * Math.PI / 360;
    let radius = 10;

    ctx.clearRect(0, 0, canvas.width, canvas.height);
    ctx.save();
    ctx.translate(offsetX, offsetY);
    ctx.scale(zoomLevel, zoomLevel);
    ctx.translate(centerX, centerY);

    primes.forEach((prime, index) => {
        let angle = index * angleIncrement;
        let x = radius * Math.cos(angle);
        let y = radius * Math.sin(angle);
        ctx.fillStyle = colors[(index % 9)];
        ctx.fillText(prime, x, y);
        if (index > 0) {
            let prevAngle = (index - 1) * angleIncrement;
            let prevX = radius * Math.cos(prevAngle);
            let prevY = radius * Math.sin(prevAngle);
            ctx.strokeStyle = colors[(index % 9)];
            ctx.beginPath();
            ctx.moveTo(prevX, prevY);
            ctx.lineTo(x, y);
            ctx.stroke();
        }
        radius += 0.1;
    });

    ctx.restore();
}

function animate() {
    primes.push(primes.shift()); // Rotate primes
    drawPrimeChart();
    if (isAnimating) {
        animationFrameId = requestAnimationFrame(animate);
    }
}

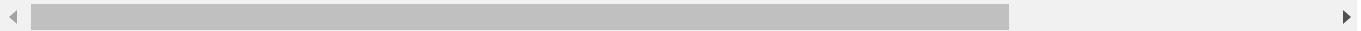
canvas.addEventListener('wheel', function(event) {
    const mouseX = event.offsetX;
    const mouseY = event.offsetY;
```

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```
        offsetX = mouseX - (mouseX - offsetX) * 1.1;
        offsetY = mouseY - (mouseY - offsetY) * 1.1;
    } else {
        zoomLevel /= 1.1;
        offsetX = mouseX - (mouseX - offsetX) / 1.1;
        offsetY = mouseY - (mouseY - offsetY) / 1.1;
    }
    drawPrimeChart();
});

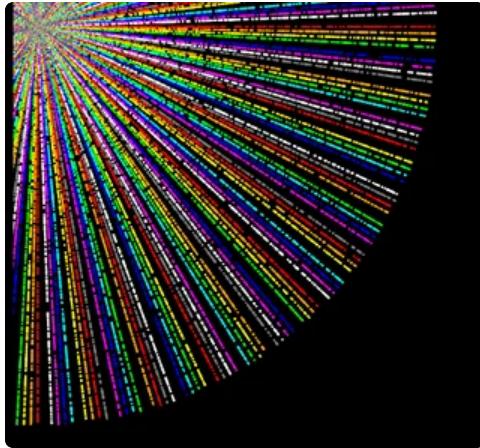
canvas.addEventListener('click', function() {
    if (isAnimating) {
        cancelAnimationFrame(animationFrameId);
    } else {
        animate();
    }
    isAnimating = !isAnimating;
});

generatePrimes();
drawPrimeChart();
animate();
</script>
</body>
</html>
```



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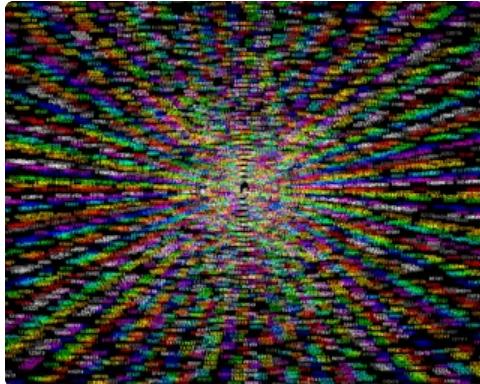
TheStocksGuy OP • 2mo ago

[↑ 1](#) [↓](#) ...

Approved 2 months ago



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Updated the code so it can be zoomed in and out on.

[↑ 1](#) [↓](#) ...

Approved 2 months ago



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            color: white;
        }
        canvas {
            display: block;
            margin: auto;
            background-color: black;
        }
    </style>
</head>
<body>
    <canvas id="primeCanvas" width="1200" height="1200"></canvas>
    <script>
        const canvas = document.getElementById('primeCanvas');
        const ctx = canvas.getContext('2d');
        const width = canvas.width;
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        const colors = ['#FF0000', '#FFA500', '#FFFF00', '#00FF00', '#00FFFF', '#0000FF', '#FF
        let primes = [];
        let zoomLevel = 1;
        let offsetX = 0;
        let offsetY = 0;
        let animationFrameId;
        let isAnimating = true;

        function isPrime(num) {
            if (num <= 1) return false;
            if (num <= 3) return true;
            if (num % 2 === 0 || num % 3 === 0) return false;
            for (let i = 5; i * i <= num; i += 6) {
                if (num % i === 0 || num % (i + 2) === 0) return false;
            }
            return true;
        }

        function generatePrimes() {
            for (let num = 1; num < 300000; num++) {
                if (isPrime(6 * num + 1)) {
                    . . .
                }
            }
        }
    </script>
</body>
```

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}

```
function drawPrimeChart() {
    const centerX = width / 2;
    const centerY = height / 2;
    let angleIncrement = 2 * Math.PI / 360;
    let radius = 10;

    ctx.clearRect(0, 0, canvas.width, canvas.height);
    ctx.save();
    ctx.translate(offsetX, offsetY);
    ctx.scale(zoomLevel, zoomLevel);
    ctx.translate(centerX, centerY);

    primes.forEach((prime, index) => {
        let angle = index * angleIncrement;
        let x = radius * Math.cos(angle);
        let y = radius * Math.sin(angle);
        ctx.fillStyle = colors[(index % 9)];
        ctx.fillText(prime, x, y);
        if (index > 0) {
            let prevAngle = (index - 1) * angleIncrement;
            let prevX = radius * Math.cos(prevAngle);
            let prevY = radius * Math.sin(prevAngle);
            ctx.strokeStyle = colors[(index % 9)];
            ctx.beginPath();
            ctx.moveTo(prevX, prevY);
            ctx.lineTo(x, y);
            ctx.stroke();
        }
        radius += 0.1;
    });

    ctx.restore();
}

function animate() {
    primes.push(primes.shift()); // Rotate primes
    drawPrimeChart();
    if (isAnimating) {
        animationFrameId = requestAnimationFrame(animate);
    }
}

canvas.addEventListener('wheel', function(event) {
    const mouseX = event.offsetX;
    const mouseY = event.offsetY;
    offsetX += (mouseX - offsetX) * 0.1;
    offsetY += (mouseY - offsetY) * 0.1;
    zoomLevel *= 1.05;
    if (zoomLevel > 10) {
        zoomLevel = 10;
    } else if (zoomLevel < 0.5) {
        zoomLevel = 0.5;
    }
})
```

[Skip to main content](#)[+ Create](#)

zoomLevel *= 1.1;

To give you a video I have made an example of how this process works on youtube. [Dirichlet Theorem Visualization with primes](#)

} else {

↑ 1 ↓

... zoomLevel /= 1.1;

offsetX = mouseX - (mouseX - offsetX) / 1.1;
offsetY = mouseY - (mouseY - offsetY) / 1.1;

}

drawPrimeChart();

});

canvas.addEventListener('click', function() {

if (isAnimating) {

cancelAnimationFrame(animationFrameId);

} else {

animate();

}

isAnimating = !isAnimating;

});

generatePrimes();

drawPrimeChart();

animate();

</script>

</body>

</html>



Approved 2 months ago

