Explicit inversion formulas for the inversion of the spherical mean Radon transform

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We derive explicit formulas for the reconstruction of a function from its integrals over a family of spheres, or for the inversion of the spherical mean Radon transform. Such formulas are important for problems of thermo- and photo- acoustic tomography. A closed-form inversion formula of a filtration-backprojection type is found for the case when the centers of the integration spheres lie on a sphere in $\mathbb{R}^n$ surrounding the support of the unknown function.